

*BANGLADESH SMALLPOX ERADICATION PROGRAMME*  
*DOCUMENTATION FOR INTERNATIONAL COMMISSION*  
*STATUS REPORT JUNE 1, 1976.*





DOCUMENTATION OF BANGLADESH - SMALLPOX ERADICATION PROGRAMME  
FOR  
INTERNATIONAL ASSESSMENT COMMISSION

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Note : Status June 1, 1976 : \* Not Prepared

\*\* Incomplete requiring additional information

## 1.0 BANGLADESH THE LAND THE PEOPLE\*

Bangladesh consists of two geographically distinct parts (Figure 1), the deltaic portion to the north, and the smaller, non-deltaic portion to the southeast. Roughly 85% of the 55,000 square miles of Bangladesh lies in the great delta of Bengal which it shares with its neighbour, the Indian state of West Bengal. Deltaic Bangladesh consists of 15 of the nation's 17 administrative districts, supports about 93% of the nation's population, and is inhabited almost entirely by Bengalis. The two non-deltaic districts are Chittagong (which has a relatively dense population) and the Chittagong Hill Tracts (which is sparsely settled). The Chittagong Hill Tracts is a mountainous area with a large man-made lake and four major river valleys. For the most part its sparse population is made up of 10 tribal groups.

The deltaic portions of Bangladesh is primarily low-lying alluvial plain, generally less than 50 feet in elevation and is criss-crossed with canals and rivers. The western part however, is drier than the east, since there is less rainfall and fewer streams run through it. While western Bangladesh receives as little as 40-50 inches of rain per year, the central delta (Dacca area) receives between 70 to 80 inches, and the eastern delta receives more than 150 inches (Sylhet district).

\* Adapted from 1973-1974 report of John Hopkins Medical Research Council - Dacca



# BANGLADESH



0 50 100  
SCALE OF MILES

## KEY



Raised areas in the plains.



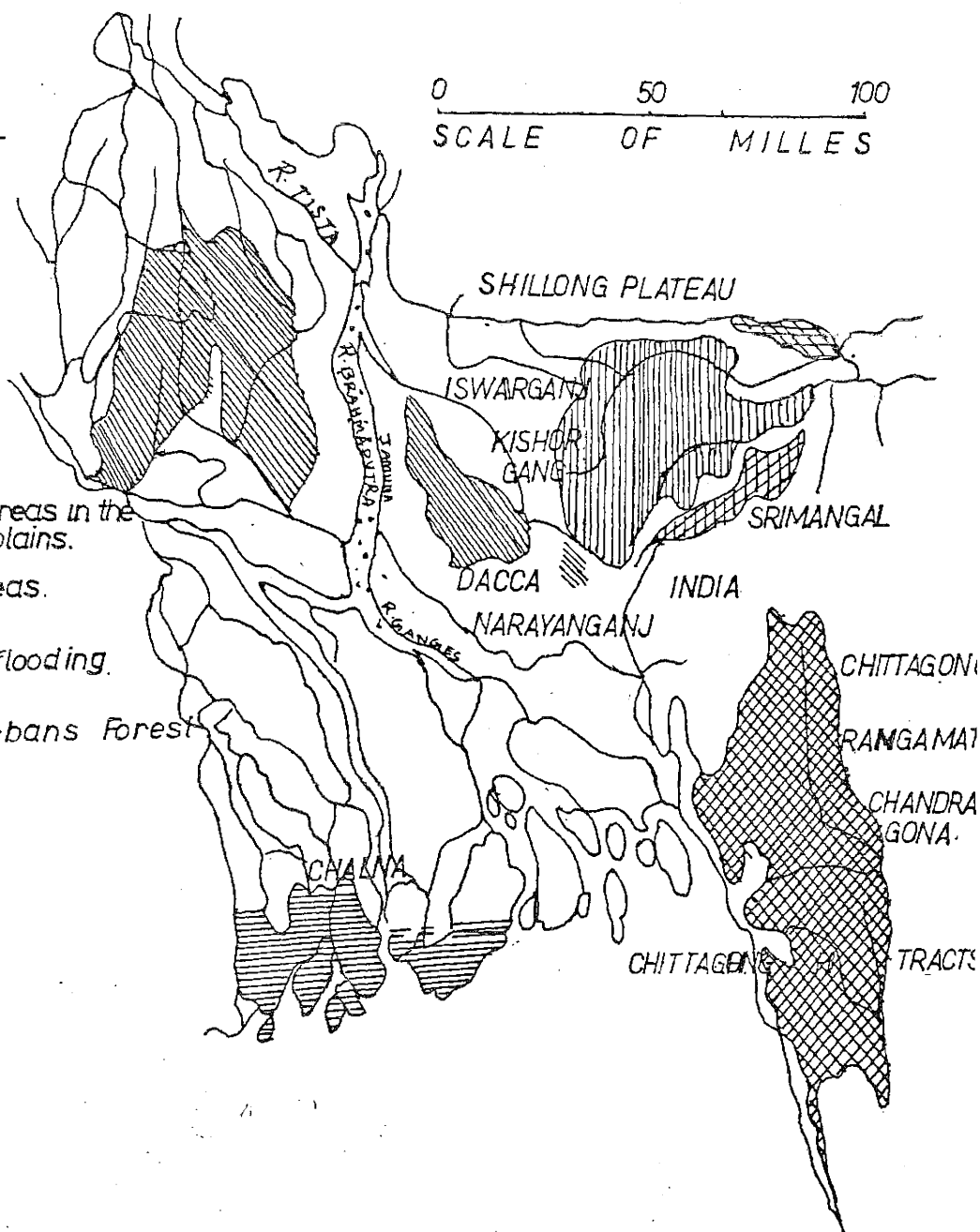
Hilly Areas.



Deeply flooding.



Sundarbans Forest



The monsoons generally begin in early June and end by late October. Cyclonic storms are common, especially in early and mid summer (May, June, July) and fall (October, November). In Bangladesh the rainy months account for over two-thirds of the total annual rainfall, while the cool dry months (November, December, January and February) account for less than one twentieth.

During the rainy season a very large proportion of the fields are flooded (to a depth of 18-20 feet in some places) and the amount of dry land is drastically reduced. The same fields during the hot dry months (April, May, June) are bone dry.

In addition to the large amounts of local rain which falls upon the land, Bangladesh is also watered by three major rivers, the Ganges, the Brahmaputra, and the Meghna, all of which bring water from outside the country. Their combined flows account for about 75% of all the water reaching Bangladesh. The Ganges and the Brahmaputra arise within a short distance of each other on the north side of the Himalayas, and since they essentially encircle these mountains, they drain most of the range and much of its periphery. Their combined catchment areas contain some 737,200 square miles. Between them, the three carry some 1,500 million tons of nutritive sediment each year.

When they reach the flat lands of their valleys, their speed is greatly reduced and is reduced still further when they reach the delta where they break up into tributaries forming a capillary bed of slowflowing, muddy rivers. It is almost impossible to over-emphasize the importance of these many rivers to the nations of the delta, especially to Bangladesh, for they serve the combined functions of aqueduct, highway, fishery, and sewer, provider and killer, builder and destroyer.

These rivers are characterized by their tendency to wander. Because of the slowness of their currents, these tributaries deposit a great deal of their load of sand, clay, and silt before reaching the bay. Part of this alluvium is deposited at the delta's seaward margin, a process which is continually increasing the size of the delta. Some of the deposit forms natural levees and the remainder is deposited on the floor of the river channels where it gradually raises the channels above the level of the surrounding land. If not encumbered by man-made embankments, the streams frequently overflow their natural levees and enrich the agricultural fields with a layer of fertile silt. From time to time the streams escape their beds, entirely wander away and build another levee system, equally temporary. Sediment deposition also produces new lands (frequently islands which are called chars). These chars are fertile and are quickly claimed by farmers who get a few year's use from them before they are washed away.

The effect of the tide on the ecology of the delta is profound; even normal tides bring large amounts of marine waters into the rivers. The mouths and lower reaches of the rivers of the delta are subject to tides, which may be exceptionally strong in the northern end of the Bay of Bengal. In the Meghna, tidal bores are sometimes a hazard to navigation. On some occasions strong tidal bores occur concomitantly with cyclones, as in the November cyclone of 1970 in which 250,000 people were killed. Besides causing many deaths, such storms flood the land with salty water, making the land unfit for cultivation of rice until the salt can be leached out by rains, a process which requires years.



The villages in the wetter (and generally younger) part of the delta are built on whatever land there is which remains unsubmerged during the annual flooding. For the most part such lands are natural levees of the rivers, levees which may have long since been deserted by their rivers. Because of the linear shape of these levees, the villages themselves tend to be linear in the active delta. In the moribund delta, where there is less water, the villages are no longer confined to linearity and develop in clusters.

Because of its relatively more fertile soil, the delta has probably always had a greater population than the drier lands to the west and hilly lands to the east. The present population of Bangladesh is estimated to be about 80 million. With an area of 55,126 square miles, the nation as a whole has a density of 1,450 people per square mile. With the exception of a few dense urban areas such as Singapore, Hong Kong, and Vatican City, Bangladesh's population density is the greatest in the world.

Population densities vary greatly within the geographic divisions of Bangladesh. In the Chittagong Hill Tracts District the density is about 110 per square mile. The deltaic portion of Bangladesh (i.e. all districts except Chittagong and Chittagong Hill Tracts) the figure rises to about 1,600 humans per square mile. The present density for Dacca District is probably about 2700-3000 people per square mile. Many thanas have densities far beyond district and national levels.

Rice, is the major crop of the area, and until 1943 Bangladesh had never known a widespread shortage (even though there were local shortages following cyclones, floods, etc.).

Aus rice (sown in March or April and harvested during the rainy season in August or September) takes up one quarter of the farm land. This is a relatively short stemmed type (3 to 3½ feet tall) and cannot tolerate deep flooding. More important than Aus rice, is Aman rice (planted in June or July and harvested in November, December, January, during the dry season). Almost one half of the country's farm land is under Aman. The many genetic varieties of Aman are tolerant of flooding and some of these grow in fields flooded by 20 feet of water and are harvested by boat. New high yield strains of IRRI rice are increasing production especially during the dry season.

Other food crops include pulses, various squashes, white and sweet potatoes, beans, peppers, and spinach. Coconuts are common. Mangos, papaya, and jackfruit are common seasonally. Jute is the chief cash crop and is the chief export of Bangladesh.

Chickens, ducks, and goats exist in fair numbers, but not in nearly the number needed. The farmers usually sell the hen and duck eggs rather than eating them themselves. Milk production by cows and buffaloes is far below the nutritional requirements of the people, and below the potential yield. Muslims (83-90% of the population) have no religious taboos against killing or eating cattle, but economic pressures prevent beef and milk from being important items in the diet of the people.

A survey of nutrition conducted in Bangladesh between 1962 and 1964 (Nutrition Survey of East Pakistan) showed widespread undernutrition and malnutrition. Forty-six percent of the households in this study had a substandard caloric intake, while at least 60% of the rural households had seriously deficient intake of protein. Consumption of oils and fats was low, and there were widespread deficiencies in vitamins and minerals, of which vitamin-A deficiency was the most common. More than one-third of the population was anemic.

Ninety three percent of the Bengali population is rural with an average per capita GNP of 60 US dollar per person. Mobility of the population is a major factor in the transmission of disease. Five specific migratory patterns have been observed :

1. Seasonal Migrations for Agriculture and Fishing : Major migrations of workers occur seasonally for planting and harvesting e.g., during the spring harvest in Sylhet 100,000s of workers travel to Sunamganj from as far as Faridpur and Barisal.
2. Urban Rural Commercial Migrations : Most local trade is carried out at twice weekly rural markets. Supply to their markets requires constant contact with urban centers. House to House trade on a barter system e.g., pots for rice is also common.
3. Urban Migration of Males : During times of low agricultural activity there is a steady travel of males to the cities to search for employment in the industrial areas of Chittagong, Noakhali, Dacca and Khulna.
4. Famine Migration : The marginal farmer, landless, and broken families move to the cities in times of trouble in search of food and employment. This immigration of vulnerable economic groups is an increasing problem for urban areas.
5. Minority Migrations : At the time of liberation 500,000 Biharies, some of whom supported the Pakistani Army were disenfranchised. These people congregated in dense slum camps in Saidpur, Ishurdi, Dacca, Khulna and Chittagong. Migration between these camps occurred whenever expectations were raised for repatriation, food, or employment.

Migration travel is usually by rail or boat. As only 25% of the train riders carry tickets, trains provide in large part free travel for those in search of food and employment. Thus the highest risk groups economic, nutritional, and disease have easy mobility.

Although this introduction describes the problems of Bangladesh in terms of its population and low resources, it would be unfair not to emphasize the strength and character of the rural Bengali. Challenged by limited resources and high prices, the villager maintains himself and his family through perseverance and hard work. The honesty, toil, and hospitality of the villager is the single greatest resource of Sonar Bangla.



POPULATION - 80 million

AREA - 55,000 miles

ADMINISTRATIVE

Divisions - 4

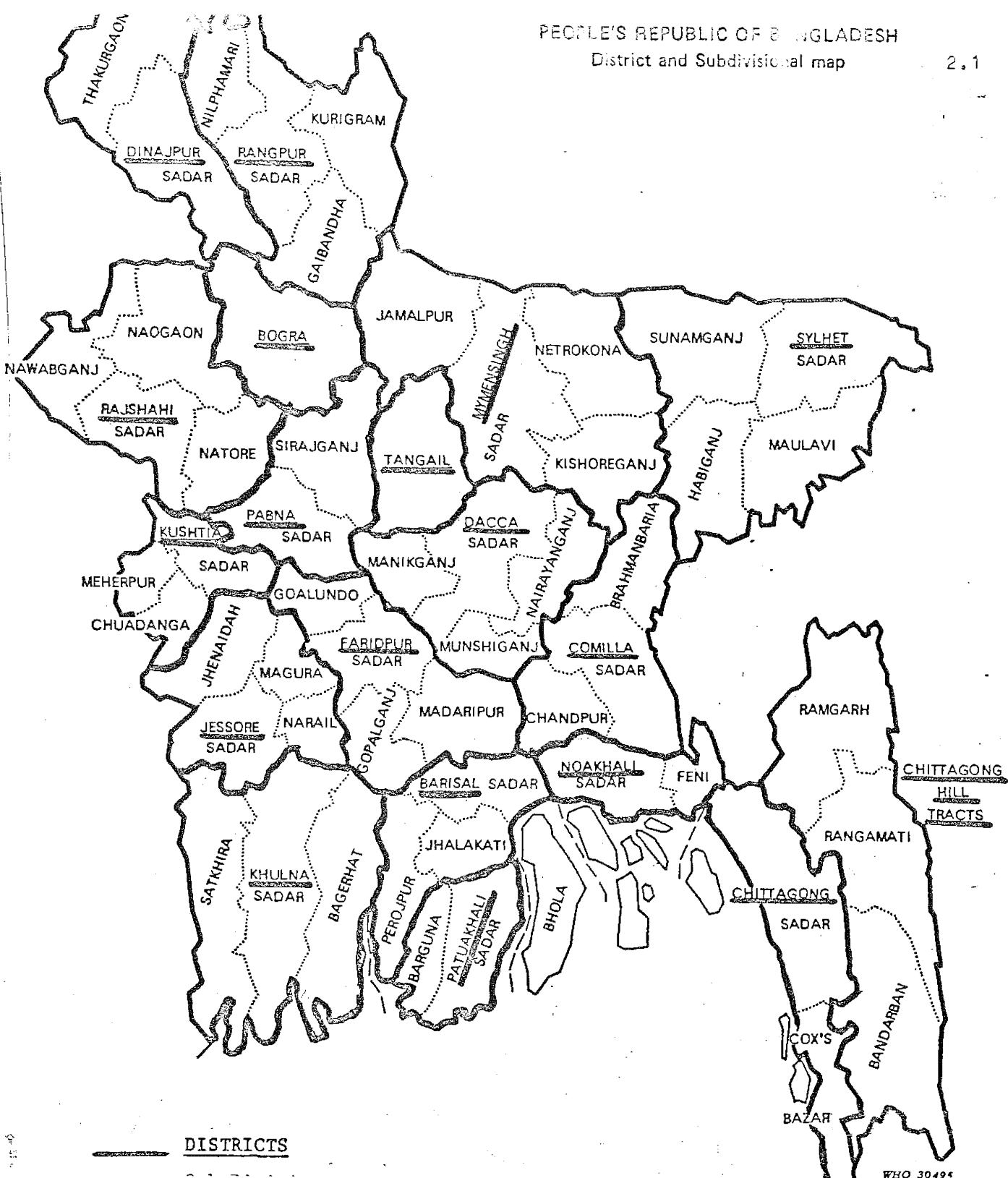
Districts - 19 ( 2-6 million)

Subdivisions-56 ( 1-2 million)

Thanas -415 (200,000)

Municipalities - 76

Villages - 60,000



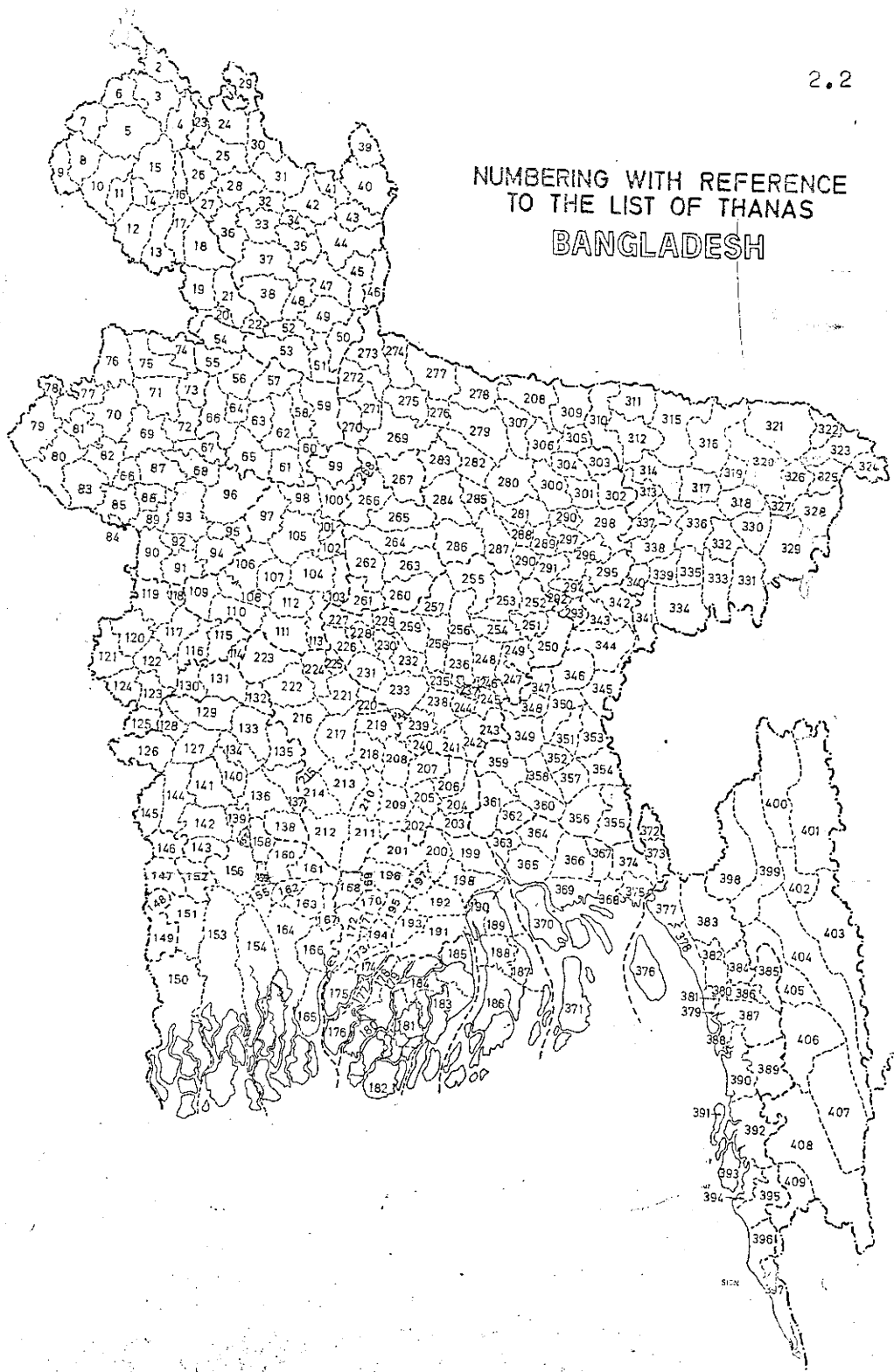
DISTRICTS





NUMBERING WITH REFERENCE  
TO THE LIST OF THANAS

## BANGLADESH







### 3.0 BANGLADESH SMALLPOX ERADICATION PROGRAM - HISTORY AND EVOLUTION OF STRATEGY

#### 1. 1961 - 1966 MASS VACCINATION

The Smallpox Eradication Scheme in Bangladesh (then East Pakistan) was launched in 1961 with the goal of mass vaccinating the entire population in a two year period, July 1961 to June 1963. During the two year attack phase 75 million vaccinations (150% of the 50 million population) were recorded. An additional 68 million vaccinations were reported during the first three years of the maintenance phase, 1963-1966. In a 1967 analysis Rahman noted that "in spite of all these high figures of vaccination and revaccination; smallpox continued to occur. Cases decreased to 71 an all time low at the end of the attack phase in 1964. In 1965 cases increased to 319 and in the year 1966 to 3209. Obviously the eradication campaign, as it was conducted, was not as effective as hoped".

#### 2. 1967-1969 MASS VACCINATION WITH COVERAGE ASSESSMENT

In analysing the above failures, it was noted that the reported number of vaccinations gave a falsely high assessment of performance. Therefore during 1967-1969 program strategy focused on mass vaccination with assessment. Using sampling techniques, vaccination coverage was measured by teams at three levels - thana, subdivisional, and national. Percent coverage became the critical measure of program progress.

#### 3. 1970 OUTBREAK INVESTIGATION

During 1970 program reports began to focus on outbreak investigations. A January 1970 investigation of an outbreak in Sribordi, Jamalpur, Mymensingh district by Arita identified major problems in outbreak reporting and control. Transmission in this outbreak went unreported from the time of its importation August 1969 until January 1970 when six cases were reported. During this period eight villages had been infected with 93 smallpox cases. The outbreak had been known to local health staff, vaccination insufficient to control the outbreak had been performed, and until January 1970 no official report had been made. Although mass vaccination and coverage assessment continued, surveillance and containment received increasing attention.

#### 4. 1971

During 1971, the year of the struggle for liberation, no cases of smallpox were officially reported. Considerable debate has since ensued as to whether this represented the absence of smallpox or a breakdown in surveillance. Three epidemiologic factors contributed to low transmission :

- a. All known smallpox infected villages during October to December 1970 were contained
- b. 1971 was a period of expected low endemicity in the 5-8 year cyclical pattern of smallpox
- c. Rural urban migration, the major factor in smallpox transmission, was significantly reduced by the military operation.

7.0

Although it will never be possible to conclusively prove zero smallpox during 1971, the following facts support the hypothesis :

- a. Headquarters Surveillance Teams in operation during January, February and March 1971 failed to detect outbreaks
- b. Smallpox surveys of refugees arriving in India from Bangladesh did not detect smallpox
- c. All outbreaks detected during the first four months of 1972 were traceable to importations from India.

5. POST LIBERATION SMALLPOX IMPORTATION JANUARY - AUGUST 1972

During the 1971 liberation struggle 10 million Bengalis left the country for India. Most of the refugees were housed in compact camps, the largest of which was Salt Lake near Calcutta. Although epidemics of infectious disease were predictable under such circumstances, priorities on food and diarrhoeal disease and an untested belief that vaccination coverage was complete resulted in a false sense of security regarding smallpox risk. In October or November 1971 smallpox was introduced into at least four camps. In Salt Lake cases were segregated in a "Chickenpox Ward" and official recognition of the problem did not occur until documented on international television.

Bangladesh liberation occurred on 16 December 1971 and priority shifted from food and disease to repatriation. Smallpox cases, incubation period cases, and unvaccinated contacts were loaded together on trucks for the trip to the border (Seaman).

During February and March 1972, eight districts suffered smallpox importations - Rangpur, Rajshahi, Kushtia, Jessore, Khulna, Faridpur, Barisal and Patuakhali. A survey of 1/6th of the villages in Swarupkati Thana, Barisal, estimated 2298 smallpox cases during February and March, an overall attack rate of 2% (Foster). All investigated outbreaks were traceable to importations with source in the refugee camps, crowded transport enroute from the camps, or transit camps.

At this time in 1972, surveillance, the detection of smallpox outbreaks, containment, and contact vaccination, had been established as the official WHO Global Strategy for Smallpox Eradication. Case detection and containment were established as the post liberation strategy.

In the post liberation period major efforts were made to re-establish the eradication program especially in the infected areas. It was recognized that failure to control smallpox by September, the end of the period of low transmission, could result in major epidemic spread to all the country. Responsibility for smallpox detection and control was delegated to the union GHA (Government Health Assistant) who on an average was responsible for 15 villages and 20,000 people. In areas where the number of outbreaks were few, SDMOsH mobilized available staff in a group system and in many cases successfully interrupted transmission. Drought during July and August 1972 destroyed many of the hastily planted crops. Famine and population movement together with uncontrolled smallpox resulted in smallpox spread. The post liberation strategy had failed.



## 6. URBAN SPREAD OF SMALLPOX 1972 - 1973

The March 1972 infection of Khulna town focused attention on the key roll of urban areas in smallpox dissemination. Because of high population density 250,000/mile in the baste (slum) areas, smallpox, when introduced, spread rapidly. Transmission occurred not only in the resident baste population but in the transients from the rural area who had come to the cities in search of food and employment. Because this group had no one to care for them when they became ill, once infected they frequently returned to their rural homes at the stage of maximum infectivity (first few days of rash) spreading smallpox to fellow travellers and to their home villages.

In August 1972 smallpox was introduced into the baste population at the old railway yard in Dacca city. This slum with an estimated 100,000 people including several thousand packed into a single old locomotive repair shed was the site of the initial importation from Faridpur. Although reported to the local Sanitary Inspector, official reporting and effective action did not take place until October, at which time wide dissemination had already occurred. This introduction resulted in over 3000 recognized smallpox cases in Dacca city and large numbers of exportations were documented. Simultaneously with the detection of smallpox in Dacca, high rates of transmission were detected in the Bihari refugee camps of Saidpur-Rangpur, Ishurdi-Pabna, Mirpur and Mohammedpur-Dacca, and Khulna. Smallpox transmission in these densely populated camps with an aggregate population of 500,000 was high. These two events led to a re-evaluation of operation and the establishment of urban/refugee surveillance and containment as the number one priority.

## 7. 1973 SURVEILLANCE TEAMS

Twenty five surveillance teams of 4-6 man teams, each supplied with his own transport were mobilized under the supervision of the SDMOsH and WHO Epidemiologists. These teams worked according to a fixed program spending 4-6 days in each of their assigned thanas in rotation. In each thana they would search the major markets, schools, and selected villages for informations of smallpox. Collected informations were investigated and where smallpox was found contact vaccination was performed. To ensure as complete contact vaccination as possible, night vaccination, at least one night in each infected village, was established as policy. Much of the progress achieved during 1973 was due to the hard work of these teams.

## 8. INTEGRATION OF HEALTH SERVICES NOVEMBER - DECEMBER 1973

During 1973 the Government integrated the Government Health and the autonomous Malaria Eradication Programme into a single Integrated Health Services. Although government policy called for full integration, top to bottom, integration was, in fact, limited to the lowest level of workers - Government Health Assistants (GHA) and Malaria Superintendent (MS). These workers received a new designation Family Welfare Worker (FWW) and were made responsible for a specific geographic area (sub-sector) with about 5000 population. Tasks assigned each worker included preparation of family card, couple registration, smallpox and malaria surveillance, Vitamin-A distribution family planning propaganda, contraceptive distribution, and health education. During early 1974 priority was given to form filling. Control of the rapidly spreading smallpox received little attention. Where action was required the dual system of administration provided for most workers an excuse not to work.

## 9. FOCUS ON INFECTED VILLAGES

In the immediate post liberation period program progress was measured by numbers of cases and deaths. In 1973 the concept of program monitoring by infected village was introduced. A village was defined as smallpox infected from date of detection until declared free on field inspection by district authority six or more weeks after last date of attack. A new standard reporting proforma was developed (Appendix-I.).

## 10. EMERGENCY PLAN APRIL 1974

Integration provided new resources and new problems to the Smallpox Eradication Programme. Effective action required a single line of authority and responsibility. In April 1974 a Government Emergency Plan created a new smallpox administrative structure :

National	-	Project Director Malaria and ADHS Smallpox
District	-	Civil Surgeon
Subdivision	-	Area Smallpox Officer (ASO)
Thana	-	Thana Smallpox Officer (TSO)

Civil Surgeons were assigned responsibility to appoint ASOs and TSOs from either health or malaria staff. Job descriptions for each level of personnel were included in the Government Order.

A new plan of containment was developed in which two FWWs were assigned in residence to each infected village for 10 days. This order also authorized the hiring of one Emergency Field Worker (EFW) from each infected village at 6 taka per day to assist in containment.

New objectives for containment were established:

- a. Priority vaccination to all residents and visitors within 100 yards of each infected house
- b. Vaccination of all residents and visitors within  $\frac{1}{2}$  mile area of the infected house
- c. Smallpox Search of all villages in 2 mile surrounding area

Supervision of containment was assigned to the Assistant Inspector and Thana Smallpox Officer.

A key feature of the emergency plan was the regular scheduled monthly meetings held in rotation at National, Divisional, and District level with District Officers, National, and WHO Staff. Each ASO reported on the status of smallpox in his area including new outbreaks, outbreaks declared free, total outbreaks, and number of active cases. Follow-up sheets in which each outbreak was listed with basic descriptive data and follow-up visits were introduced (Appendix-II.). These follow-up sheets allowed a rapid evaluation of surveillance and containment efficacy. The surveillance interval, the number of days between first attack and detection, the containment interval, the number of days between detection and last attack, and source detection and confirmation were developed as quantitative measures of program effectiveness. At these meetings global and regional progress toward smallpox eradication were

reviewed. Operational problems were identified and discussed. With this new strategy smallpox infected villages dropped rapidly and eradication by December 1974 was predicted.

#### 11. FLOOD AND FAMINE AUGUST - OCTOBER 1974

By August 1974 smallpox had been largely restricted to two subdivisions; Kurigram in Rangpur and Jamalpur in Mymensingh. During August and September unprecedented floods (the worst in 20 years) devastated much of the country including the two infected subdivisions. The floods destroyed houses and crops and caused major famine. With famine, loss of houses, and loss of employment, the expected migration to urban areas to search for food and employment began. In December 1974 smallpox was transmitted to the bastee areas of Dacca and Rangpur.

In January 1975 urban bastees in Dacca, Khulna, Rangpur, and Chittagong were destroyed by Government order, uprooting an estimated 500,000-10,00,000 people. One of these bastees had become infected from Jamalpur during late December. Although cross-notification had identified these bastees at Kauran Bazar as infected, hut to hut search had failed to detect any active cases. During the destruction of the bastees 25 active cases were detected and isolated. Asymptomatic incubation period cases had however already dispersed through the country. A January cable to WHO predicted 200 exportations. Eradication strategy had again failed.

#### 12. NATIONAL MOBILIZATION FEBRUARY 1975

Although the program setback was clearly explainable, reversal of progress toward smallpox eradication in Bangladesh at a time that neighbouring countries were nearing eradication questioned the credibility of the concept of smallpox eradication, the credibility of the Bangladesh Government as an effective implmter of Health program, and the credibility of WHO as a technical assistance organization. Under Presidential directive smallpox was declared a national emergency and an all out mobilization of resources for smallpox eradication was ordered. Bilateral and international agencies were requested to assist.

Reviewing past failures in eradication in Bangladesh, it became apparent that the combination of dense population, high population movement, and famine created previously unexperienced high rates of spread.

New objectives of performance were established : 80% detection of new outbreaks within 15 days of first attack, 100% containment within 21 days of detection, and 90% source detection. To meet these objectives program operation was strengthened.

- a. One health worker was permanently assigned to each infected village from date of detection till the village was declared free.
- b. The number of local recruited and trained Emergency Field Workers to assist in containment was increased from one to six.
- c. The plan authorized an additional 4 EFWs to serve as house guards at each infected house to keep patients in isolation and ensure vaccination of all family contacts, visitors, and traders.

- d. Containment books listing all residents and visitors within  $\frac{1}{2}$  mile area including date of vaccination, and verification of take were made mandatory.

To ensure adequate supervision of containment one epidemiologist was recruited for each 15 infected villages. The number of epidemiologists was increased within 30 days from 10 to 60.

Changes in strategy required major increases in transport, personnel, and operating costs. Costs for the expanded program, 3.5 million dollars were made available to the program from bilateral funds by the Government of Sweden. To ensure the support to the field operation, headquarters facilities were expanded to include a 14 station radio network, an operations - training room, a repair facility, and a store room.

Despite the rapid expansion of resources and the full commitment of government, the numbers of outbreaks continued to rise during April and May.

Each new outbreak was examined to determine its cause. In this way problems of detection and containment were identified and new solutions evolved. New procedures developed in the field to meet specific needs were implemented including :

- a. Use of containment teams of experienced personnel travelling outbreak to outbreak to ensure full contact vaccination.
- b. House Guard Books to list all residents and visitors of infected house to ensure their vaccination and surveillance.
- c. List of fever cases occurring within 100 yards of infected house as a means of early detection of local spread.
- d. Relative lists to ensure vaccination of all relatives irregardless of contact status.
- e. Posting of supervisory personnel full time in each infected village.
- f. Formalization of national cross-notification system to ensure follow-up of all cross-notifications.

Report meetings were established weekly at the subdivisional level to compile data, identify problems, and reallocate resources. Weekly reports were forwarded to Dacca by radio for cumulation and dispatch in a weekly newsletter.

With the seasonal drop in transmission and improved detection and containment, the number of outbreaks dropped rapidly. The "first" last outbreak Sheikpara, Chittagong had a last date of attack on 15 September.

### 13. INTENSIVE SEARCH FOR MISSED OUTBREAKS

With containment of the known smallpox outbreaks, priority in operation was shifted to detection of missed chains of transmission. As it was recognized that no single system of surveillance would detect all outbreaks a multisystem approach to outbreak detection was utilized :



- a. Mass publicity to inform/public of need to, method of, and reward for reporting new outbreaks of smallpox. /the
- b. Regular house to house searches to publicize reward and search for cases.
- c. Intensive epidemiologic follow-up of known outbreaks to determine source, contacts, and spread.
- d. Special smallpox searches, house to house, village to village, in high risk areas by special smallpox search teams,
- e. Market and school searches by surveillance teams.

One missed chain of transmission, the "Second" Last outbreak in Kuralia, Bhola, Barisal, was identified and contained. Since this case with date of attack 16 October, 1975, seven months of intensive surveillance have failed to detect any active smallpox cases.

#### 14. RASH FEVER AND RASH DEATH SURVEILLANCE

In November 1975 Surveillance strategy was again changed to focus attention on possible mild, atypical or attenuated cases. Regular weekly reports of smallpox, doubtful diagnosis, rash fever, and rash deaths were initiated direct from Thana to ASO and to ADHS. Search methodology was also changed to stress detection of rash fever and rash deaths. The number of informations collected during the house to house search rose from 101 smallpox in June 1975 to 39,000 rash fever and rash death cases in January 1976. Clinical epidemiologic and laboratory investigation were initiated on all doubtful diagnosis and rash death cases. Special searches were initiated in remote areas of Chittagong Hill Tracts, in high risk areas (municipalities), and areas of poor search.

#### 15. TWO YEARS SURVEILLANCE

WHO has established a two year period of zero cases as the prime criteria for certification of smallpox eradication. At the end of the two years (November 1977) an International Commission will come to Bangladesh. Decision regarding certification will not be made on the absence of smallpox reports, but on documented surveillance demonstrating continuing regular collection of rash informations, their full investigation, and reporting from all areas of Bangladesh. Only with such informations can the Program, the Government, and the World be sure that a system exists in Bangladesh sensitive enough to detect even a single chain of smallpox transmission. X

### 3.0 CRITERIA OF EVALUATION - SMALLPOX ERADICATION PROGRAMME BANGLADESH 1950 - 1976

1950 - 1960	Smallpox Cases and Deaths by Month
1961 - 1967	Smallpox Vaccinations (Primary & Revaccinations)
1968 - 1970	Smallpox Vaccination Coverage (% Coverage)
1971	Smallpox Cases
1972 - 1973	Subdivisional reporting of cases and death by week including percent reporting
1974	Smallpox Infected Villages by Month
1975	Smallpox Infected Villages by Week
	Surveillance Interval - Interval between first attack and detection
	Containment Interval - Interval between detection and last attack
	Source Detection and Confirmation
JULY +	Line Listing of Outbreaks
	House to House Search - Informations
SEPTEMBER +	Line Listing of Cases
	House to House Search Assessment Coverage
1976	Weekly Reporting by Thana - Rash Informations and Investigation
	House to House Search - Informations and Random Assessment

MONTHLY REPORTING FORM OF SMALLPOX  
INFECTED VILLAGES UTILIZED FROM DECEMBER  
1973. FROM FEBRUARY 1975 THE REPORT WAS  
SUBMITTED WEEKLY BY RADIO, TELEPHONE OR  
TELEGRAPH UNTIL 10 WEEKS AFTER LAST DATE  
OF ATTACK

FORM 10-1 (Rev. 1-1-64) **SMALLPOX REPORT**

AREA OFFICIAL OFFICE AND DISTRICT OFFICE

DISTRICT OFFICE:                      AREA OFFICE:                      DATE:                     

1. Name report of smallpox infected villages

Note: A village is designated as smallpox infected from date of detection until six weeks after the last date of attack at which time the village must be certified free by field visit of District level personnel (in, each, stage, DHO, AEO, Surveillance Team)

IF NO SMALLPOX INFECTED VILLAGES CHECK BOX ☒

STAGE (LAST NAME OF AREA OFFICIAL ASSIGNED VISITS)	NUMBER OF VILLAGES INFECTED LAST OF MONTH	NUMBER OF (+) NEWLY REPORTED SP VILLAGES	NUMBER OF (-) SP VILL- AGES CURED FIRST SP CASE	NUMBER OF + SP PERSONS END OF MONTH	NUMBER ACTIVE CASES LAST VISIT
1. KARURHAT.	1	0	1	0	0
2. SHEEPUR.	19	6	15	10	13
3. SHARIKAWDI.	4	4	1	7	5
4. MANDIGRAM.	0	0	0	0	0
5. KHEILAL.	6	2	6	2	0
6. KHISKAW.	5	1	4	2	1
7. SADAR.	6	5	4	7	12
8. DRUMOT.	0	10	3	7	2
9. GASTALI.	2	4	2	4	3
10.	43	32	36	39	36
11.					
12.					
TOTAL					

2. AREA SMALLPOX OFFICER FIELD VISITS DURING MONTH

Number of visits to newly infected smallpox villages 22

Number of follow up visits to old smallpox villages 62

Number of visits to investigate villages where  
diagnosis of rash not smallpox NIL.

Signed Area Smallpox Officer                     

Date:

CODE	THANA	UNION	VILLAGE	FOLLOW UP VISITS										SOURCE	X NOT	FOLLOW UP VISITS											
				RPT DTE	INV DTE	CA- SES	ISA TMS	ACT TMS	DTE TMS	DTE TMS	DTE TMS	DTE TMS	DTE TMS			WEEKLY	RECORD	ENTER	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
DSR 12/1	BIROL	DHORNOPUR	BISHONATPUR		10/6	6	0	2	10/6	6/6						ST											
TKN 2/7	PANCHAGAR	KIZPATKAZOL DIGHI	TOMIRHAT		20/6	1	0	1	8/6	8/6				TKN 2/8		ST	ASO		ST	23/6							
TKN 2/8	PANCHAGAR	HALIBACHA	BOCHDUMTAPARA		20/6	2	0	2	8/6	12/6				?		ST	ASO		ST	1/7							
DSR 21/2	NOWABGANJ	GOLABGANJ	NONDONPUR		1/6	7	2	1	5/4	19/6				?		ST	ASO		ST	1/7							
DSR 15/6	BIRGANJ	MORICHA	MORICHA		28/6	1	0	1	21/6	21/6				DIGOLPURI													
DSR 15/7	BIRGANJ	SHIBRAPUR	ARAILHATPUR		23/6	3	2	0	1	6/6				?													
DSR 13/8	HORIPUR	BAKUA	BAKUA		13/7	2	1	1	5/7	5/7				INDIA													
TKN 2/9	PANCHAGAR	HARIBACHA	ELURARI		10/7	1	0	1	2/7	2/7				TKN 2/8													
TKN 2/3	BALIADANGI	BALIADANGI	BALIADANGI		23/7	2	1	1	13/7	19/7				?													
DSR 13/2	KOTWALI	SONKORPUR	PURBO HOHONPUR		12/8	2	0	1	10/7	2/8				RANGPUR	X												
DSR 11/4	BOCHAGANS	CHATOIL	KADALKATI		16/8	1	0	1	5/8	5/8				DACCA??	X												
TKN 4/1	DEBIGANS	DEBIGANS	DEBIGANS		21/8	1	1	0	16/8	16/8				Mymensing	X												
TKN 4/2	DEBIGANS	TEPERIGANS	KALIZA BASANI		20/8	8	3	2	MAY 24	21/8				BODA 05/24	X												
TKN 4/3	DEBIGANS	(INDIA)	KOTH BASANI		21/8	26	5	9	MAY 24	17/8				BODA 05/24	X												
TKN 7/4	BALIADANGI	DUOSUO	ALOCKSHIPI		25/7	2	0	2	19/7	20/7				TKN 7/3													
TKN 7/5	BALIADANGI	DHONTOLA	DHONTOLA		25/7	1	0	1	24/7	24/7				TKN 7/3													
TKN 7/6	BALIADANGI	AMSANKHOR	BEURGHARI		25/7	15	4	11	16/6	23/7				INDIA 05/24													
TKN 7/7	BALIADANGI	BAROBARI	BELHARA		25/7	1	0	1	18/7	18/7				TKN 7/3													
TKN 3/1	BODA	KATOLDIHI	DANAKAYA SUTIPUKURIA		19/8	11	4	3	06/24	6/8				SHAKO 06/24 BODA PS 7/24													
TKN 2/40	PANCHAGAR	CHAKLAHAT	NARANDPUR		21/7	2	0	2	13/7	16/7				?													
TKN 2/41	PANCHAGAR	CHAKLAHAT	BAROBARI		20/7	2	0	2	13/7	16/7				?													

NOTE : ENTER UNDER FOLLOW UP VISIT NUMBER OF NEW CASES FOUND AND CODE AS TO WHO MADE VISIT CS,CMOH,SIMOH,ST(SURV. TEAM ) HQ,WHO USING COLORED PEN OR PENCIL EXTEND COLORED LINE TO SIX WEEKS AFTER LAST DATE OF ATTACK-WHEN NEW CASES FOUND EXTEND LINE

Who made follow up visit  
24 - Number of active cases





# 4.1 SMALLPOX CASES BY YEAR BANGLADESH 1950 - 1975

1947  
1948  
1949

2493  
5416  
3907

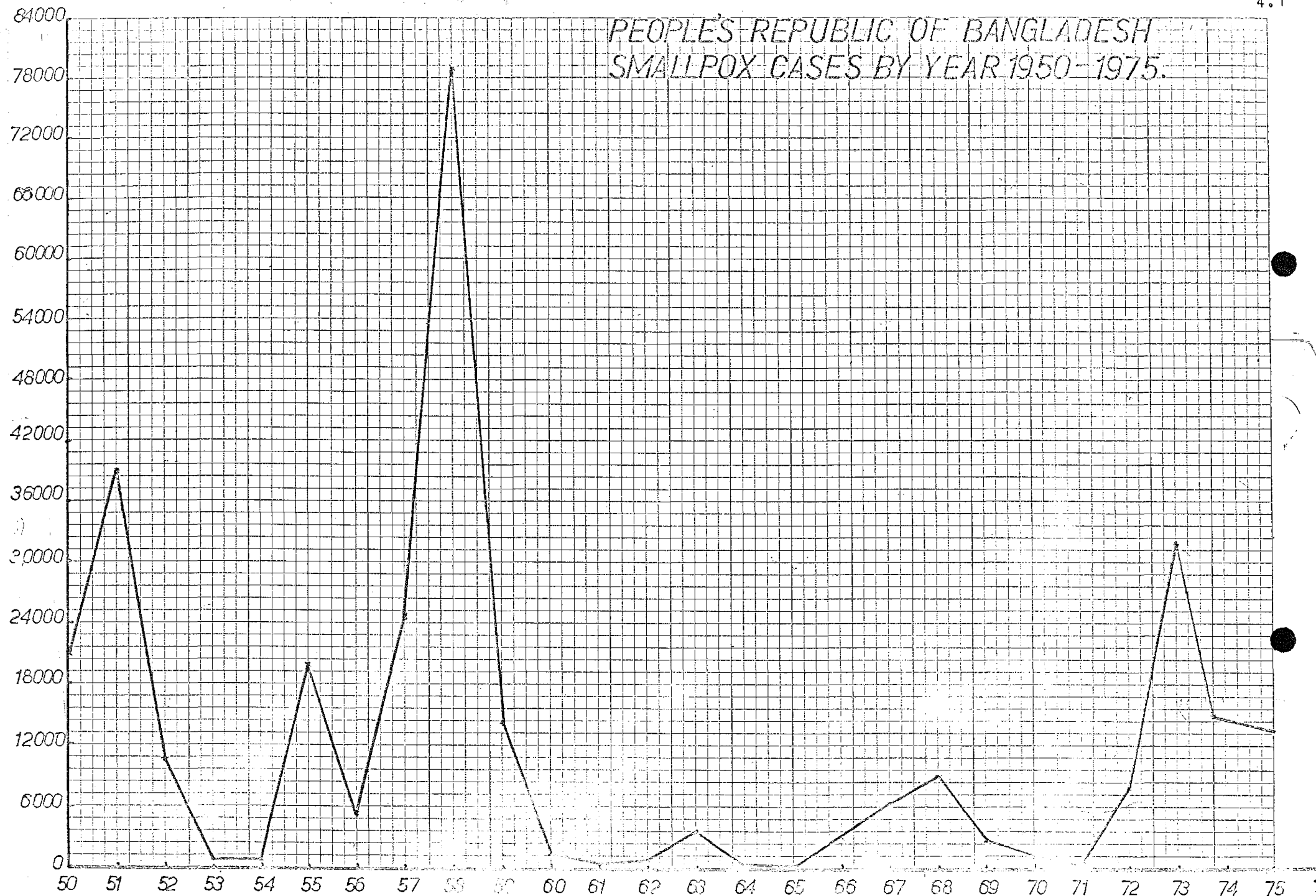
YEAR	CASES
1950	21273
1951	38871
1952	10490
1953	1102
1954	445
1955	1926
1956	4962
1957	24920
1958	77060
1959	15048

YEAR	CASES
1960	1905
1961	660
1962	610
1963	3735
1964	69
1965	316
1966	3207
1967	6648
1968	9039
1969	1925

YEAR	CASES
1970	1473
1971	0
1972	10754
1973	32711
1974	16485
1975	13798
1976	
1977	
1978	
1979	

SMALLPOX CASES BY YEAR

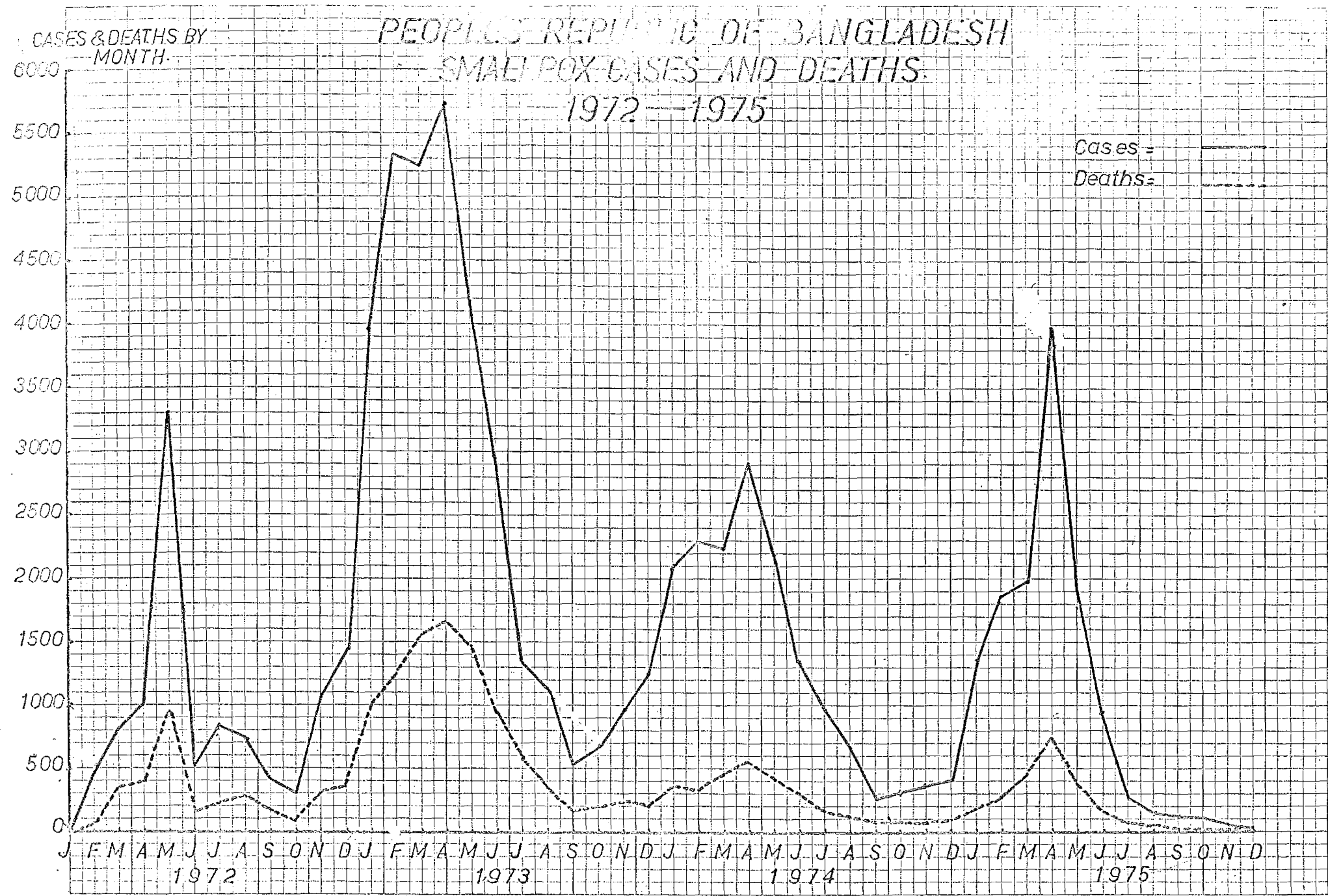
4.1



## 4.2 BANGLADESH SMALLPOX CASES BY DISTRICT 1966 - 1975\*

DISTRICT	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	10 YEAR TOTAL
Dinajpur	64	210	128	5	0	0	0	512	423	488	1830
Rangpur	131	130	253	20	38	0	789	3599	4935	727	10622
Bogra	198	16	58	65	296	0	11	1726	306	1516	4192
Pabna	1	286	290	65	11	0	302	776	79	171	1981
Rajshahi	82	254	234	19	5	0	149	625	1640	277	3285
Kushtia	67	35	469	515	0	0	123	1640	61	121	3031
Jessore	1626	141	182	63	0	0	390	3021	210	104	5737
Khulna	204	118	192	4	0	0	3800	3283	506	62	8169
Faridpur	123	298	371	80	0	0	2106	4615	527	978	9098
Barisal	141	216	388	4	0	0	2203	1995	80	720	5747
Patuakhali	0	79	349	3	0	0	150	765	473	32	1423
Mymensingh	0	79	349	29	532	0	0	1785	5655	2827	11256
Tangail	0	79	349	0	111	0	0	570	417	156	1254
Dacca	97	3563	2385	536	0	0	561	4904	468	2537	15051
Sylhet	90	179	544	396	480	0	1	298	616	1796	4400
Comilla	63	667	721	32	0	0	73	1393	60	843	3852
Noakhali	20	177	861	8	0	0	90	1157	8	381	2702
Chittagong	0	270	1602	74	0	0	6	47	4	62	2065
Chittagong HT	0	2	12	7	0	0	0	0	17	0	38
TOTAL	2907	16641	9039	1925	1473	0	10754	32711	16485	13798	96733

\* Bangladesh Ministry of Health, 1960-1971 WER 1972 - 1975





1974

DISTRICT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
Dinajpur	-	2	27	27	113	124	39	37	23	5
Rangpur	388	595	364	133	2002	439	277	293	82	70
Bogra	31	8	22	16	67	75	27	21	18	3
Rajshahi	102	282	209	288	334	208	169	43	5	
Farma	-	5	13	4	9	28	-	20		
Kushtia	18	22	1					20		
Jessore	7	51	15	109	8	1		12	4	
Khulna	17	160	132	77	94	3	3			
Barisal	23	1	4					52		
Patuakhali	67	97	146	21	81	17	10	33	1	
Faridpur	133	60	62	48	158	37	16	10	3	
Dacca	81	71	53	69	73	37	3	8	11	27
Tangail			1	192		120	24	41	23	7
Mymensingh	549	537	497	1101	994	582	440	388	93	157
Sylhet	15	183	94	10	4	45	67	69	94	33
Comilla	1	-	-	15	-	5	6	22	1	5
Noakhali	-	6	2							
Chittagong									3	1
Chittagong HT										
TOTAL	1432	2107	1642	2110	3937	1721	1081	1064	361	308

\* Source : WER ↑

\*\* Includes delayed detection ↑

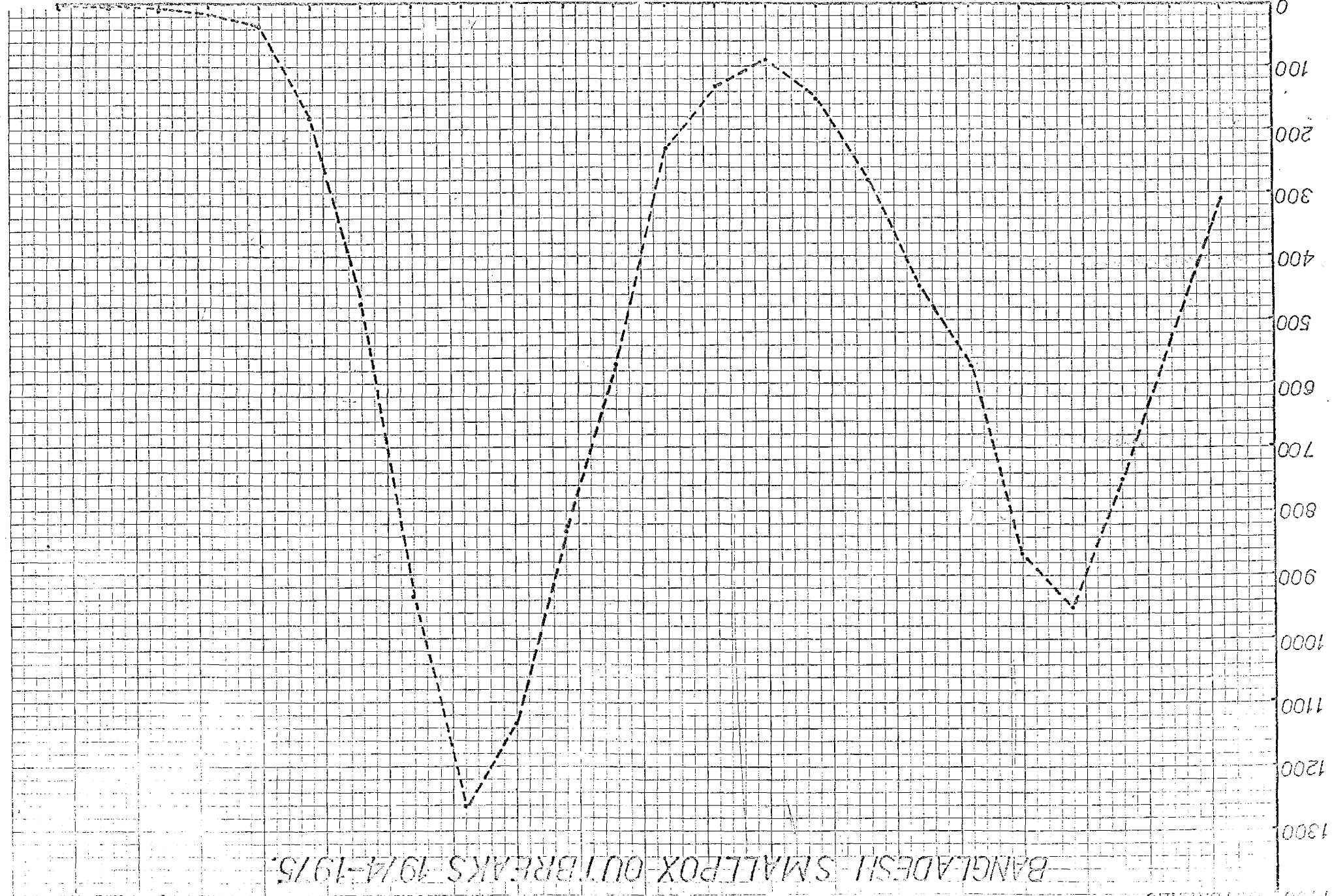
## BY DISTRICT 1974 - 1975

1975														1974	1975
NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
3	16	32	71	101	156	91	19	18						423	488
199	93	194	155	146	115	82	55	1	1					4935	727
1	17	171	290	362	501	124	55	13						306	1516
		4	1	12	94	90	46	30						1640	277
			3	8	46	51	20	-	15	25	3			79	171
		-	-	8	47	35	29	2						61	121
3		-	-	2	41	32	28	1						210	1000
		-	5	14	32	1	8	2						506	62
		14	23	51	287	64	6	82	39	47	26	81		80	720
		-	-	12	2	-	13	5	-	-	-	-	-	473	32
		9	76	249	227	250	118	26	19	2	2	-	-	527	978
15	20	158	343	503	824	442	197	33	9	22		6		468	2537
8	1	1	13	45	81	15	1							417	156
116	201	384	609	693	757	269	82	29	4					5655	2827
1	1	-	4	67	357	489	754	78	43	4				616	1796
-	5	21	77	153	214	247	69	35	27					60	843
		-	31	34	153	87	26	29	19	2				8	381
			2	7	14	2	-	24	10	3				4	62
17														17	0
363	354	988	1703	2467	3948	2371	1504	408	186	105	31**	87**		16485	13798

1975

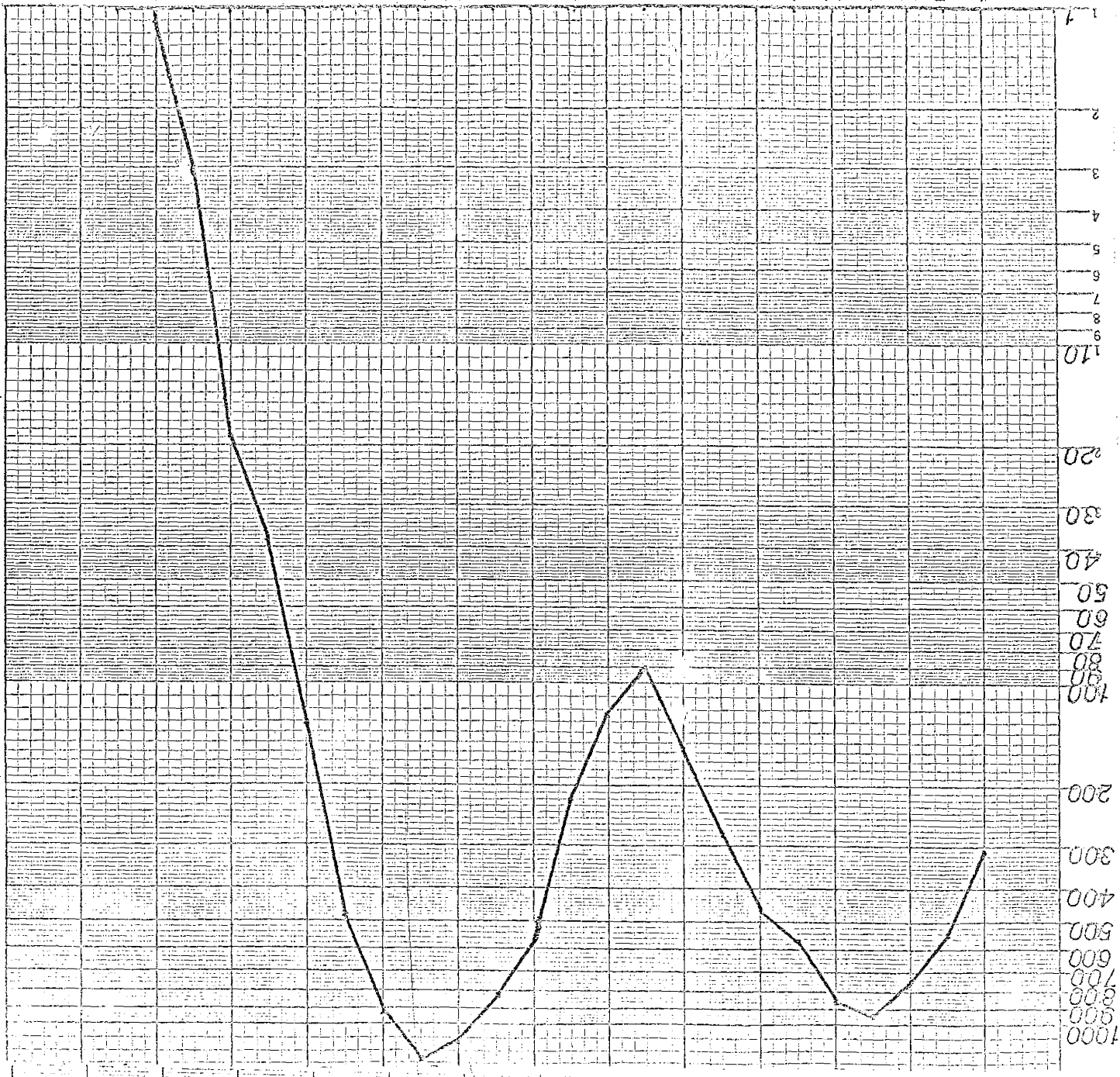
1974

J F M A M J J A S O N D J F M A M J J A S O N D



BANGLADESH SMALLPOX OUTBREAKS 1974-1975

OUTBREAKS



1974-1975 BY MONTH

J F M A M J J A S O N D J F M A M J J A S O N D 1974 1975

4.6 SMALLPOX INFECTED VILLAGES\* - BANGLADESH 1974-1975

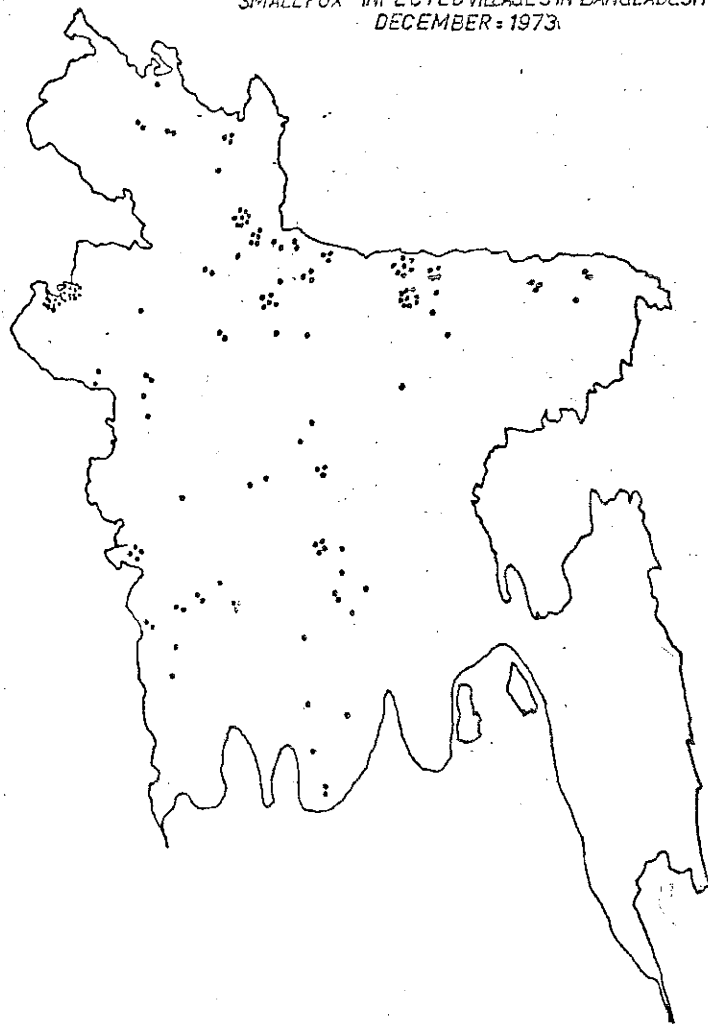
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DISTRICT	1974												1975											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Dinajpur	✓ 2	13	18	19	✓ 37	✓ 17	17	11	✓ 7	✓ 1	✓ 1	✓ 9	✓ 10	✓ 23	✓ 36	55	25	12	2	0	0	0	0	0
Rangpur	✓ 34	110	157	278	✓ 245	124	87	39	30	✓ 22	56	✓ 99	✓ 145	✓ 127	108	54	32	14	0	0	0	0	0	0
Bogra	✓ 42	✓ 44	50	43	✓ 39	✓ 11	8	✓ 8	✓ 4	✓ 0	✓ 1	✓ 12	✓ 65	✓ 108	205	215	95	22	1	0	0	0	0	0
Rajshahi	✓ 46	38	69	100	✓ 120	✓ 111	75	29	8	✓ 3	✓ 0	✓ 0	2	4	13	34	39	10	3	0	0	0	0	0
Pabna	✓ 3	✓ 3	6	5	✓ 1	✓ 0	1	5	1	✓ 1	✓ 0	✓ 0	✓ 0	✓ 1	✓ 3	12	17	9	0	1	2	0	0	0
Kushtia	✓ 4	11	10	2	✓ 1	✓ 0	0	0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 7	30	13	8	2	0	0	0	0	0
Jessore	✓ 8	14	10	13	✓ 3	✓ 0	2	0	0	0	0	0	0	0	1	11	16	7	1	0	0	0	0	0
Khulna	✓ 4	11	15	15	✓ 8	✓ 1	0	0	0	0	0	0	✓ 1	✓ 2	26	7	4	2	1	0	0	0	0	0
Barisal	✓ 3	✓ 4	4	1	✓ 1	✓ 0	0	1	0	0	0	0	4	✓ 13	26	41	24	23	18	5	4	1	1	0
Patuakhali	✓ 6	✓ 35	33	10	✓ 9	✓ 10	6	3	1	0	0	0	0	0	✓ 1	3	1	1	0	0	0	0	0	0
Faridpur	✓ 22	✓ 10	17	27	✓ 20	✓ 8	5	6	1	0	0	0	8	39	81	120	63	23	10	4	0	1	0	0
Dacca	✓ 15	✓ 25	17	26	✓ 19	✓ 7	4	3	1	4	5	5	56	100	159	211	185	108	27	6	4	0	0	0
Tangail	✓ 0	✓ 15	19	24	✓ 20	✓ 23	5	12	✓ 6	3	✓ 2	✓ 0	2	✓ 8	15	17	15	3	0	0	0	0	0	0
Mymensingh	✓ 103	113	312	382	342	257	232	149	78	51	62	✓ 97	271	349	319	193	169	124	10	2	0	0	0	0
Sylhet	✓ 15	✓ 12	10	2	✓ 2	✓ 7	2	10	✓ 13	✓ 2	✓ 2	0	✓ 1	✓ 5	15	124	210	450	29	13	0	0	0	0
Comilla	✓ 1	2	5	2	✓ 1	✓ 1	1	1	✓ 2	✓ 2	✓ 0	✓ 1	✓ 7	✓ 40	78	99	108	46	7	0	5	0	0	0
Noakhali	✓ 1	2	0	1	✓ 0	✓ 0	0	0	✓ 0	✓ 1	✓ 0	✓ 0	0	11	24	50	32	13	9	3	1	0	0	0
Chittagong	✓ 0	✓ 0	0	0	0	✓ 0	1	3	✓ 3	✓ 1	✓ 0	✓ 0	0	✓ 2	✓ 5	4	0	1	10	4	3	1	0	0
Chittagong HT	✓ 0	0	0	0	0	✓ 0	0	0	✓ 0	✓ 0	✓ 1	✓ 0	0	0	0	0	0	0	1	0	0	0	0	0
TOTAL	✓ 309	522	752	950	868	577	446	280	155	91	130	223	572	837	1132	1280	939	470	151	38	19	3	1	0

\* Village is defined as smallpox infected from date of detection until certified free after field inspection six or more weeks after last date of attack.



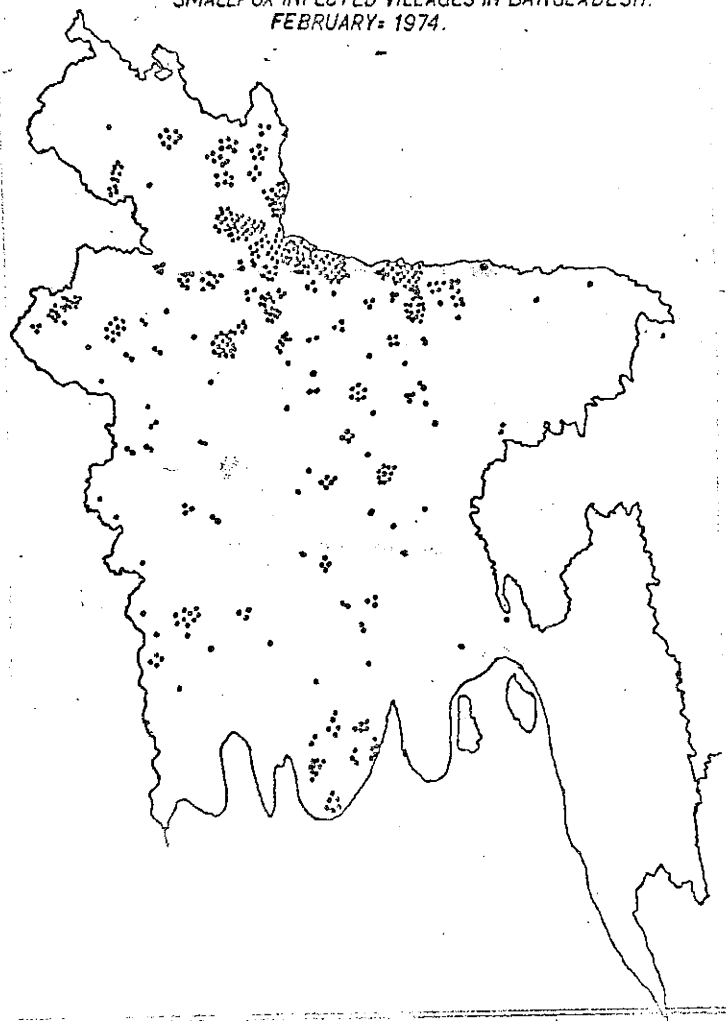
SMALLPOX INFECTED-VILLAGES IN BANGLADESH  
DECEMBER - 1973



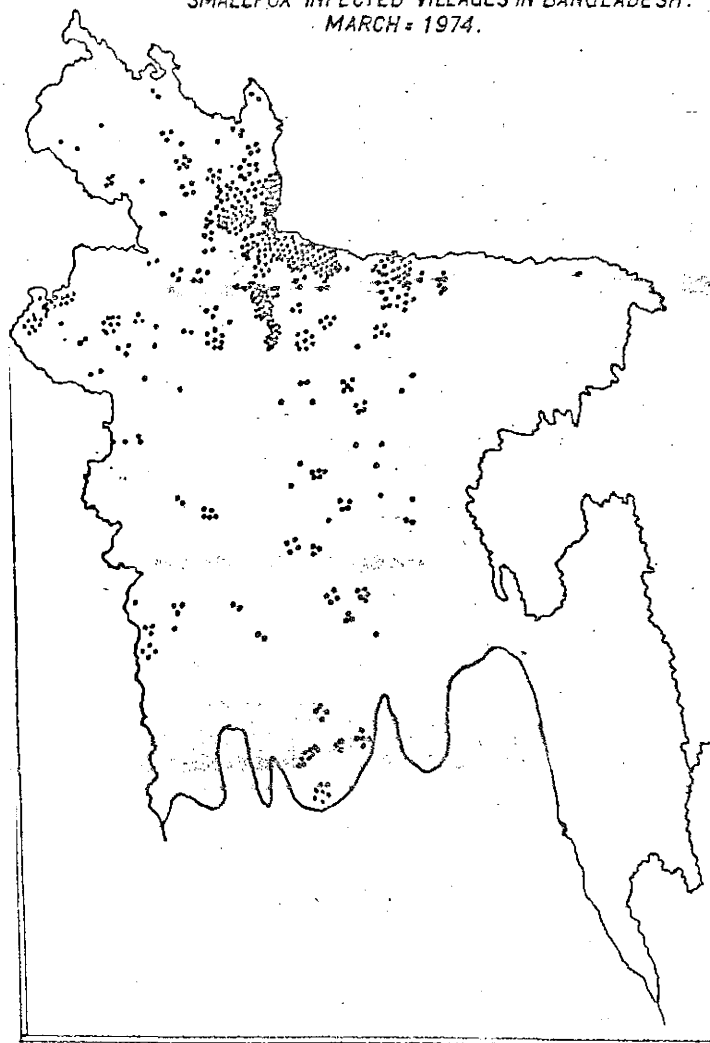
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
JANUARY: 1974.



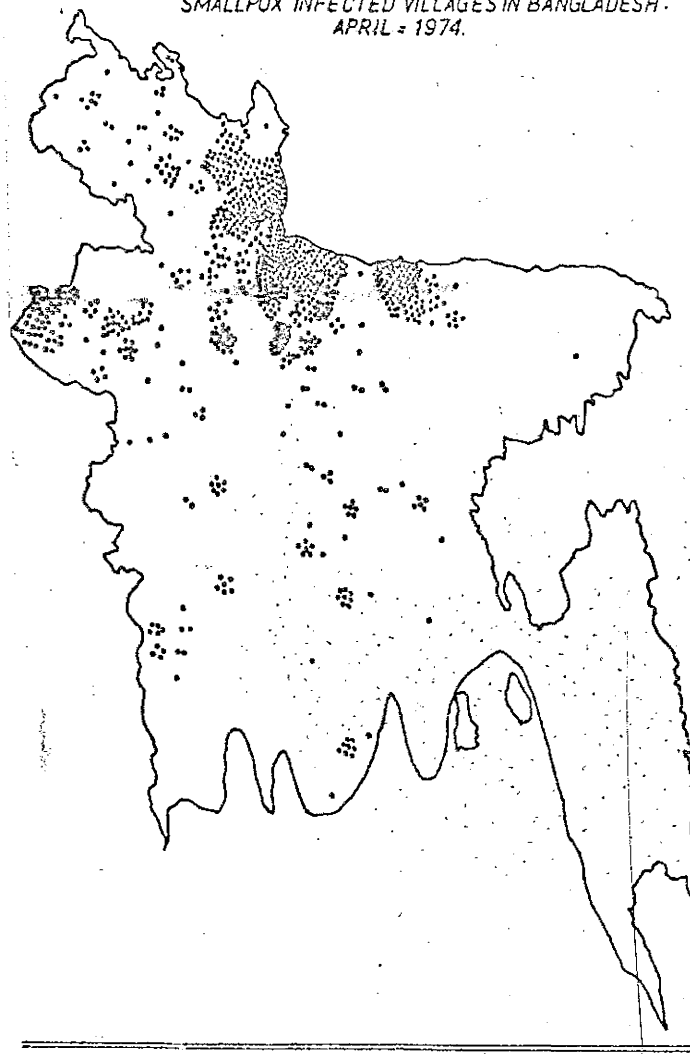
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
FEBRUARY: 1974.



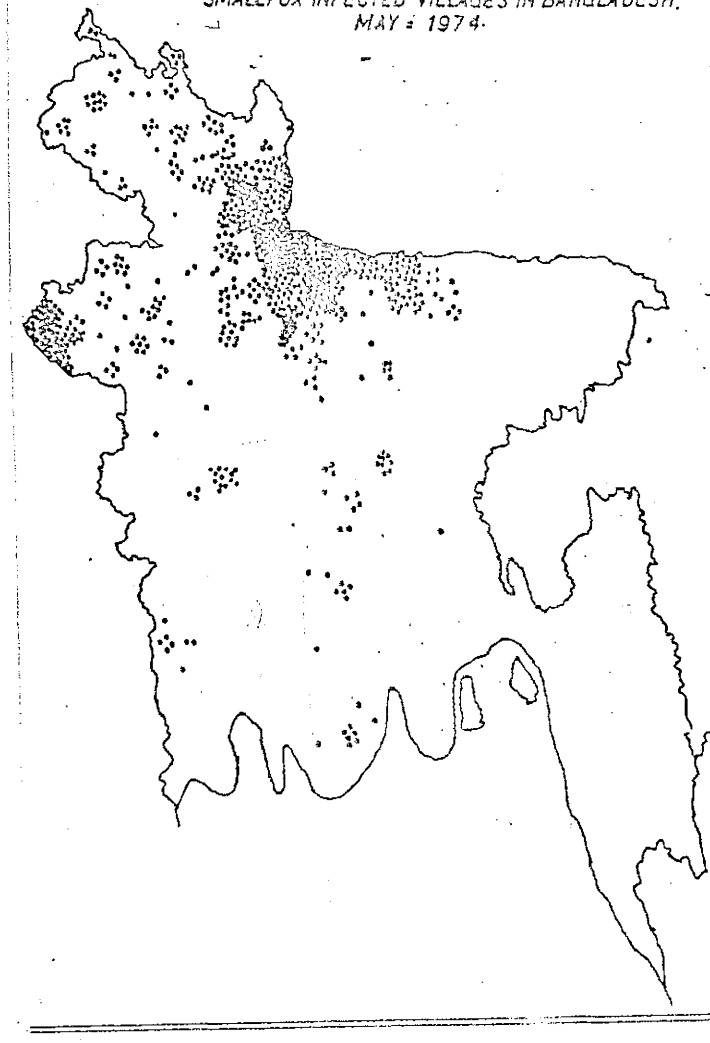
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
MARCH = 1974.



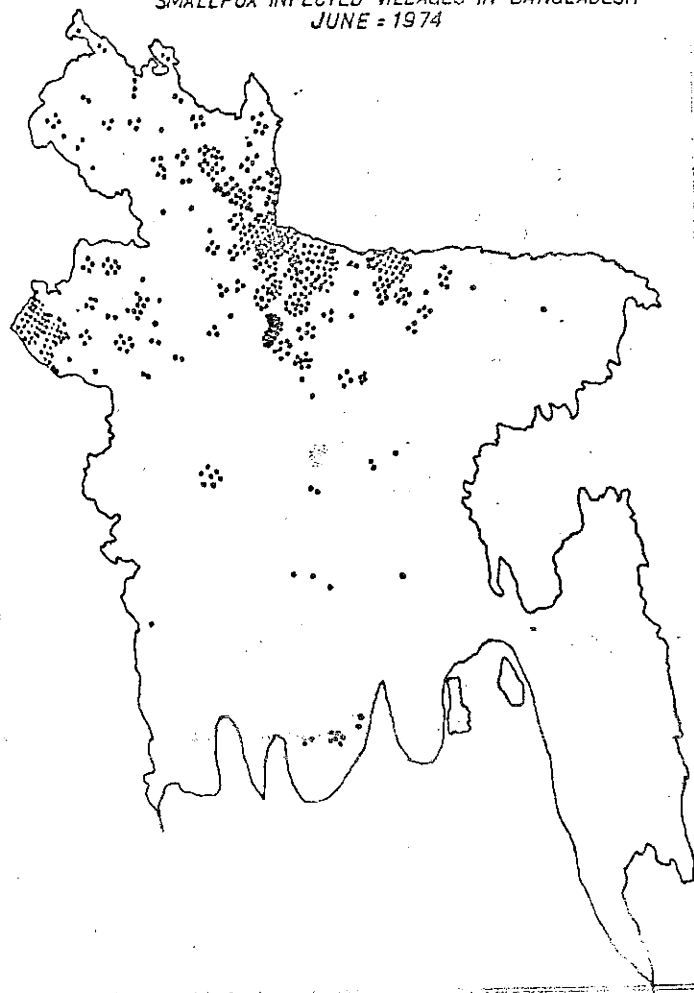
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
APRIL = 1974.



SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
MAY = 1974.



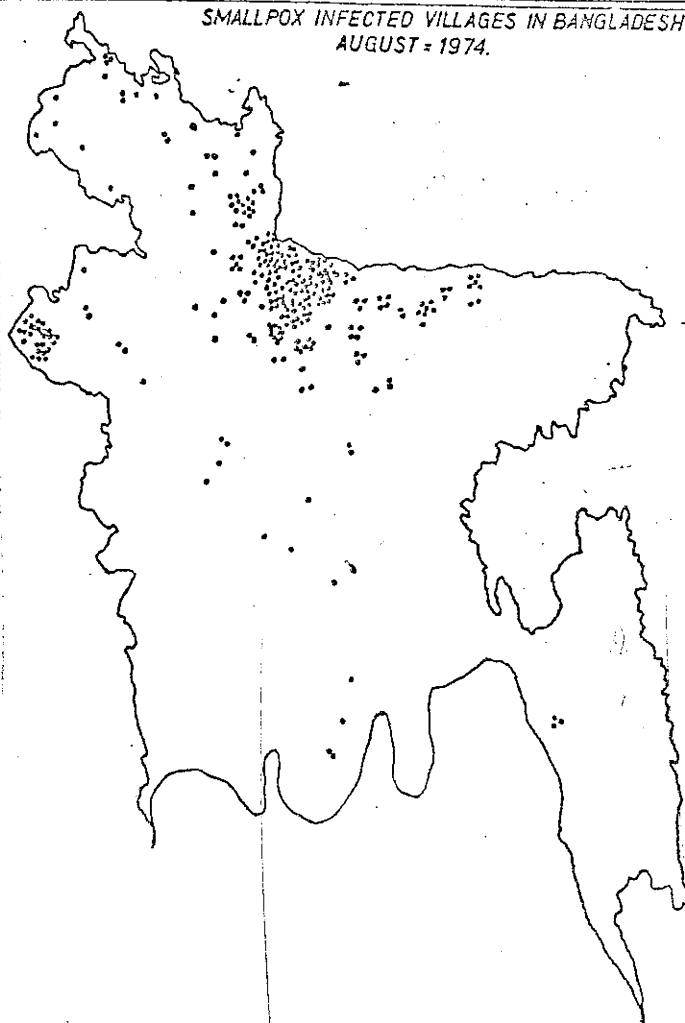
SMALLPOX INFECTED VILLAGES IN BANGLADESH  
JUNE - 1974



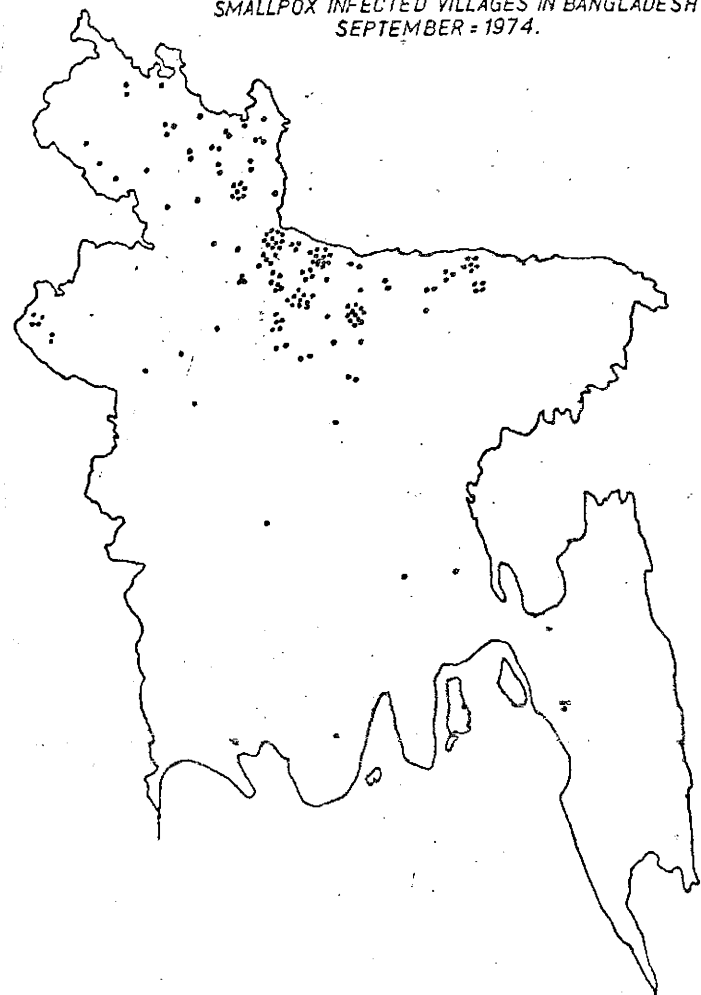
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
JULY = 1974.



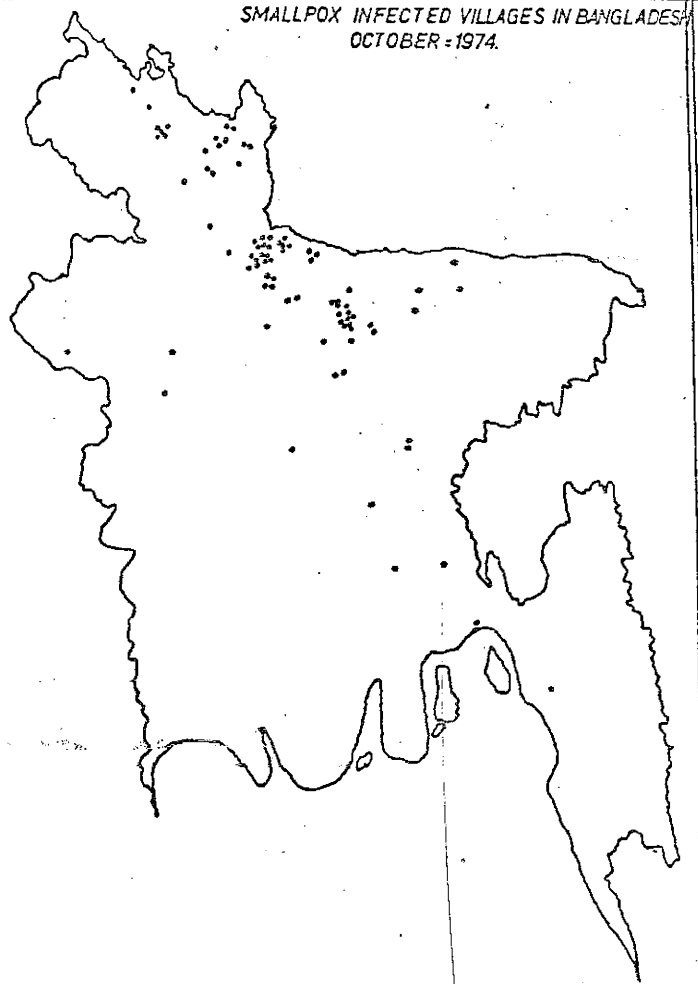
SMALLPOX INFECTED VILLAGES IN BANGLADESH  
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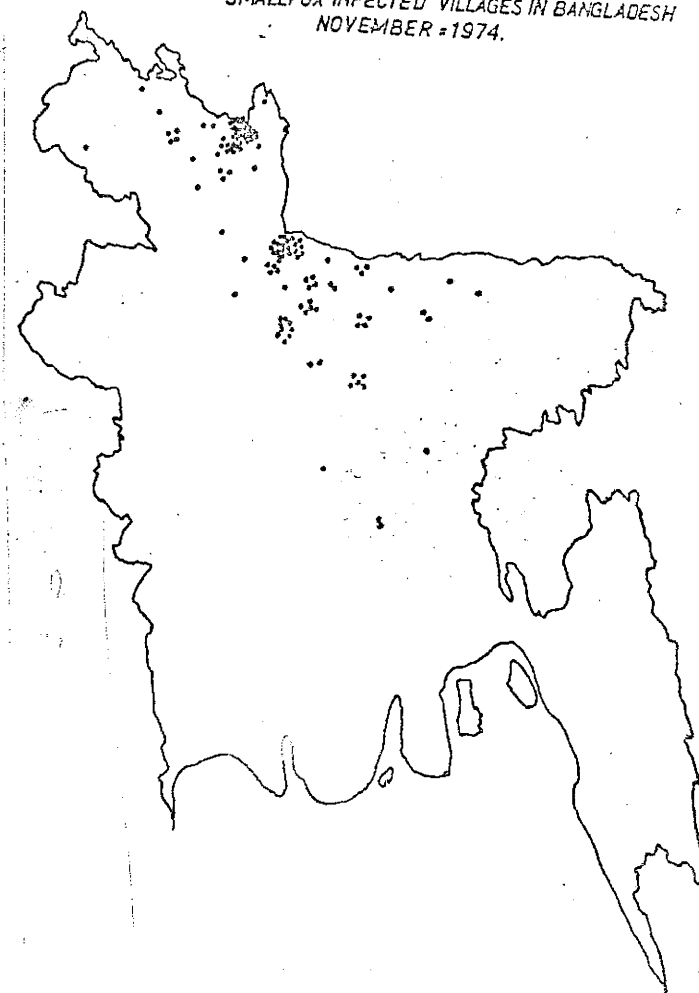
SMALLPOX INFECTED VILLAGES IN BANGLADESH  
SEPTEMBER - 1974.



SMALLPOX INFECTED VILLAGES IN BANGLADESH  
OCTOBER - 1974.

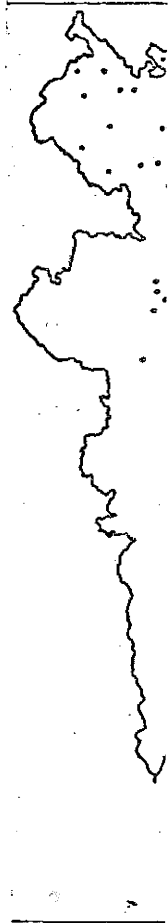
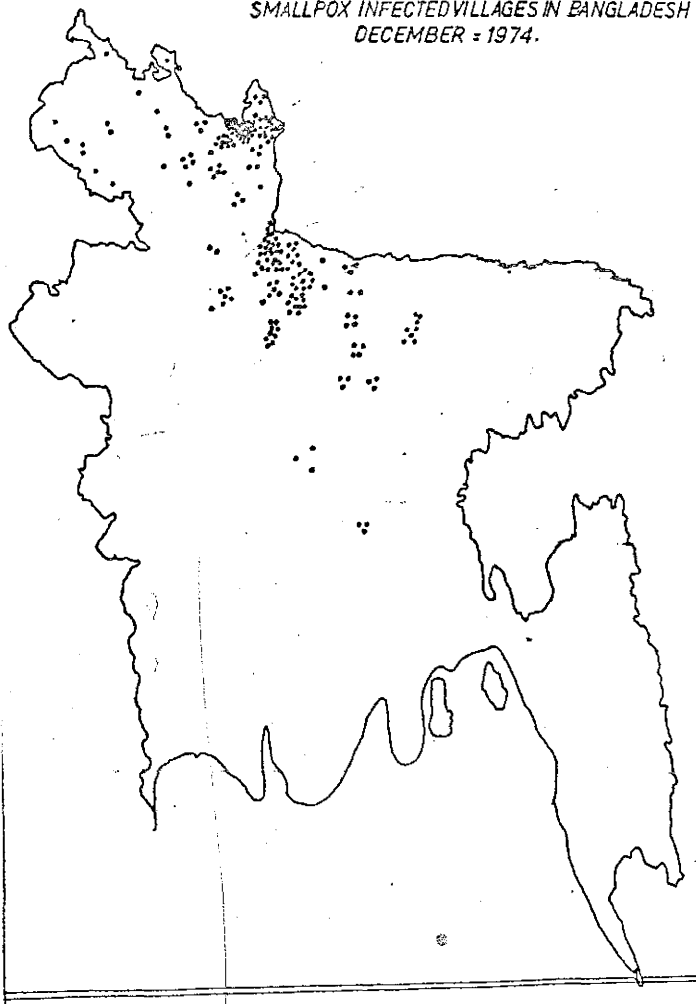


SMALLPOX INFECTED VILLAGES IN BANGLADESH  
NOVEMBER - 1974.

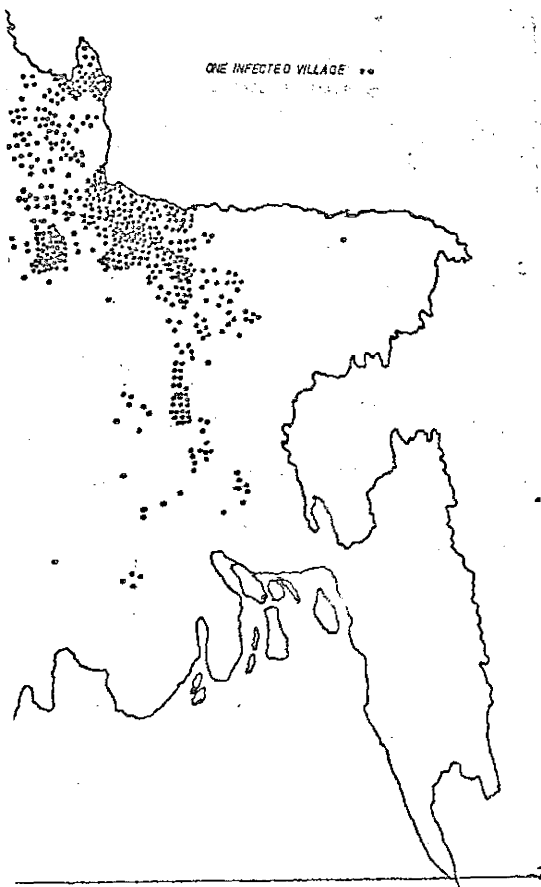
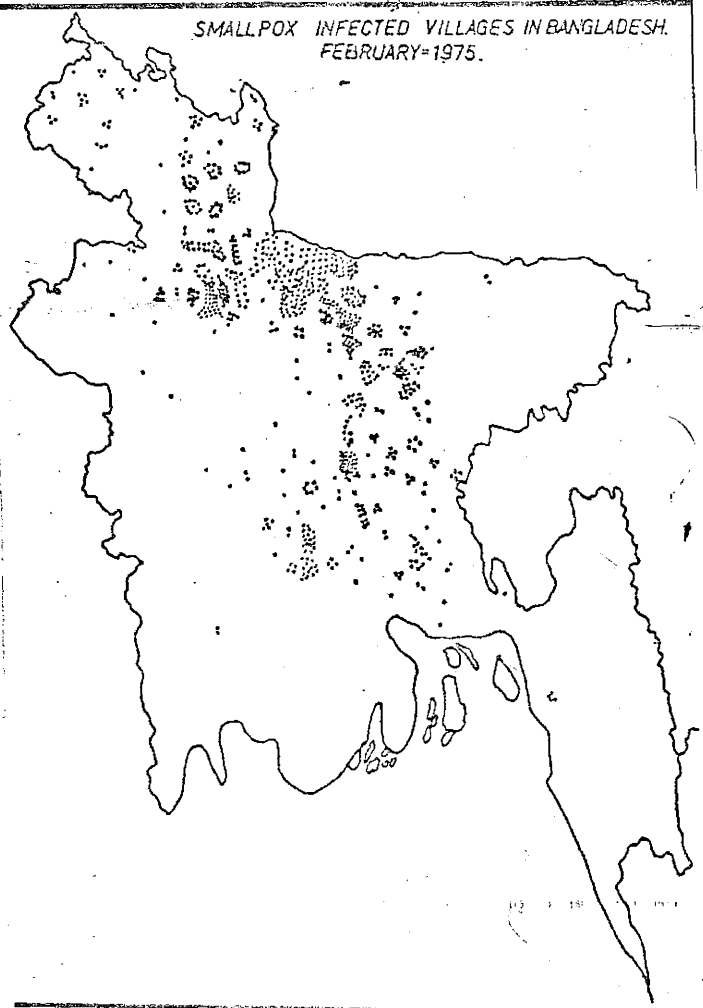




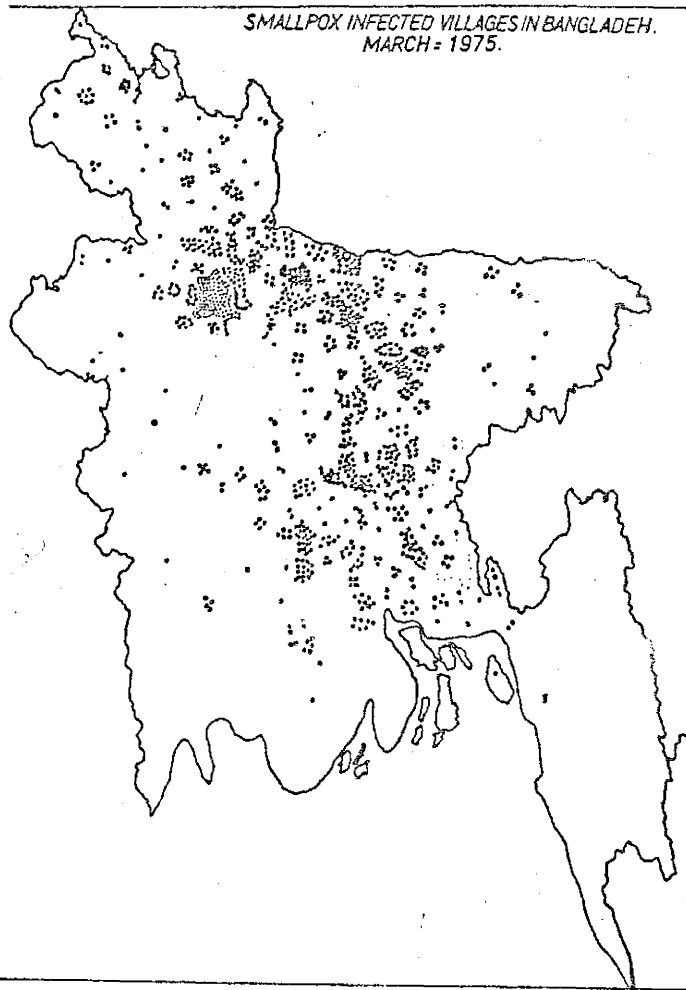
SMALLPOX INFECTED VILLAGES IN BANGLADESH  
DECEMBER = 1974.



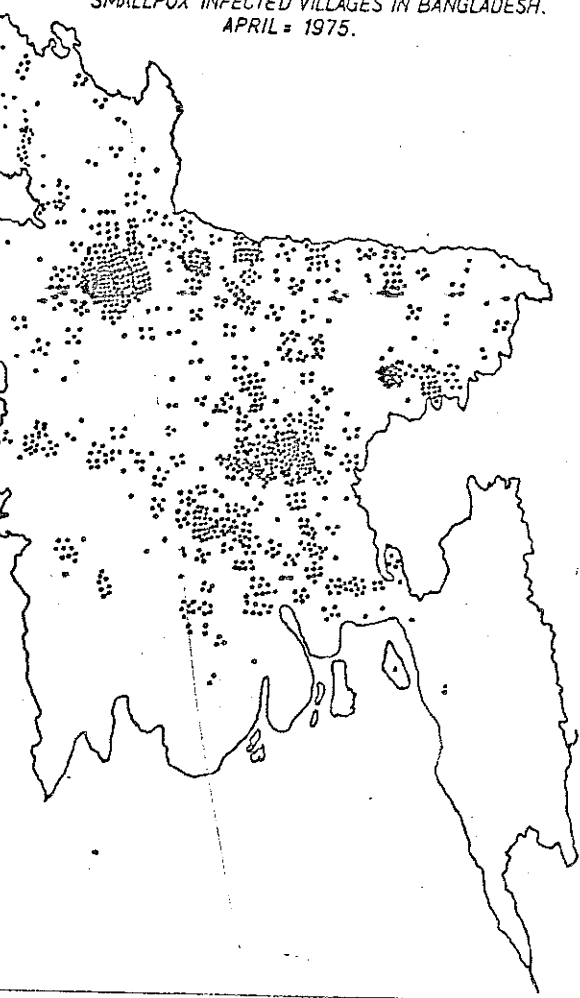
SMALLPOX INFECTED VILLAGES JANUARY 1975

SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
FEBRUARY 1975.

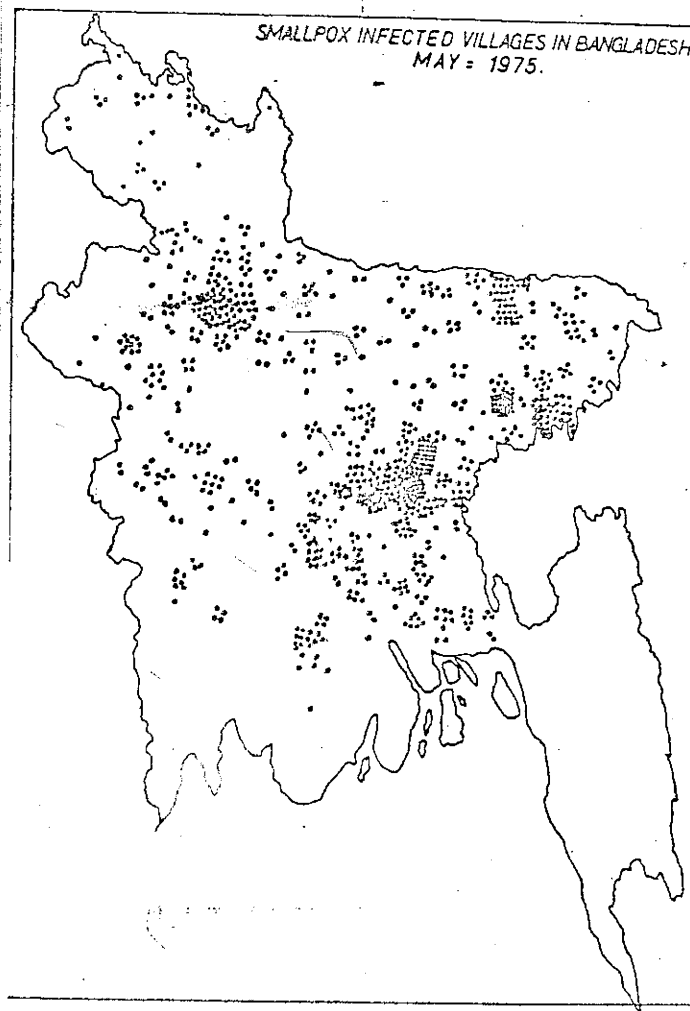
SMALLPOX INFECTED VILLAGES IN BANGLADEH.  
MARCH = 1975.



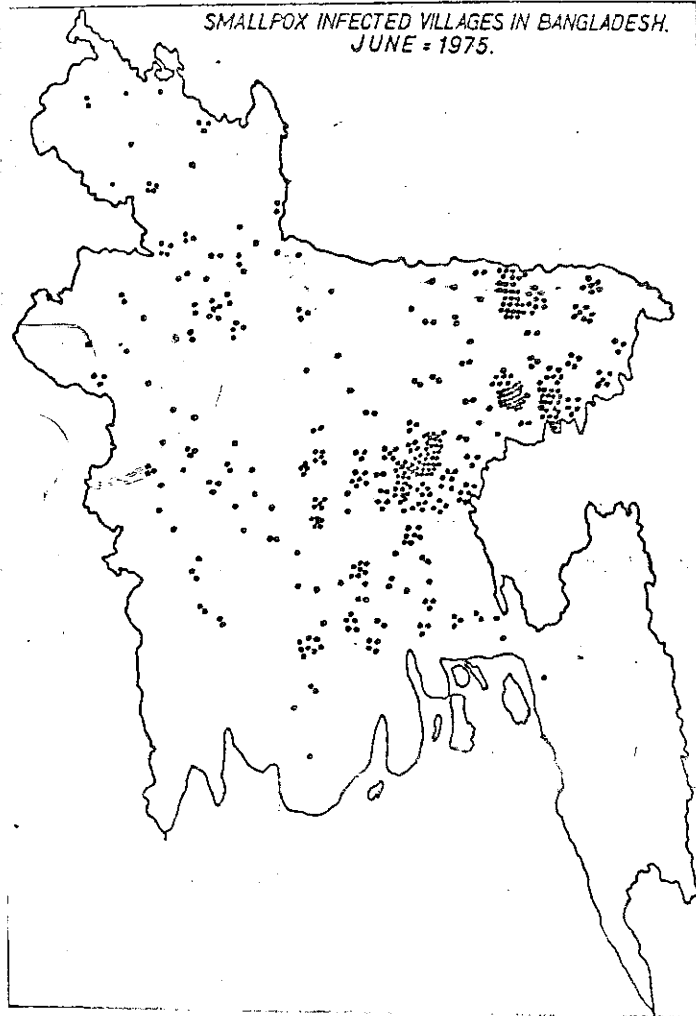
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
APRIL = 1975.



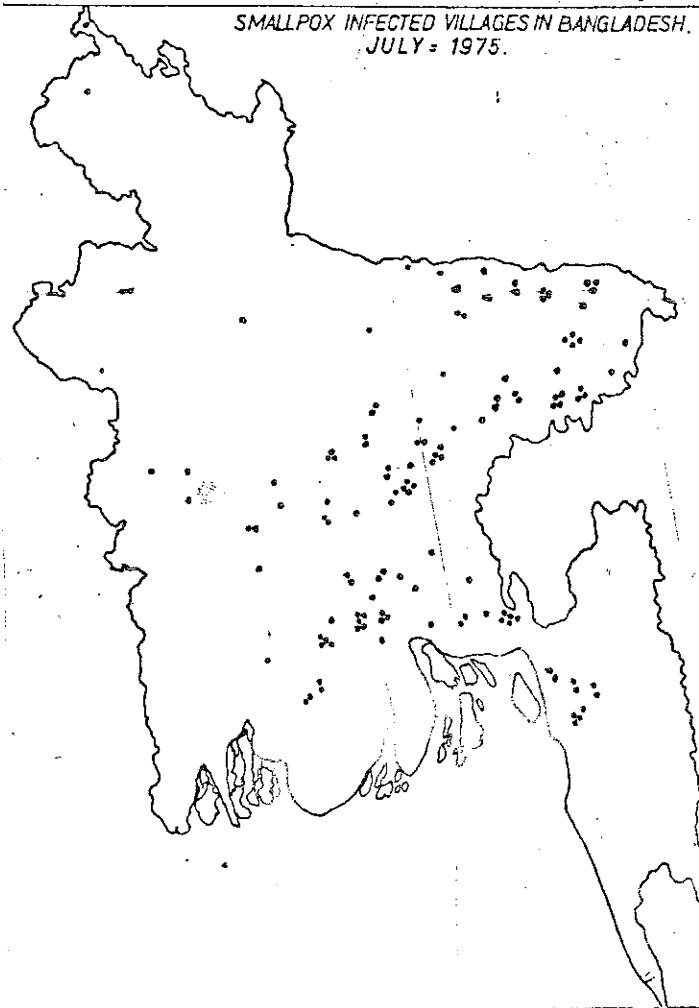
SMALLPOX INFECTED VILLAGES IN BANGLADESH  
MAY = 1975.



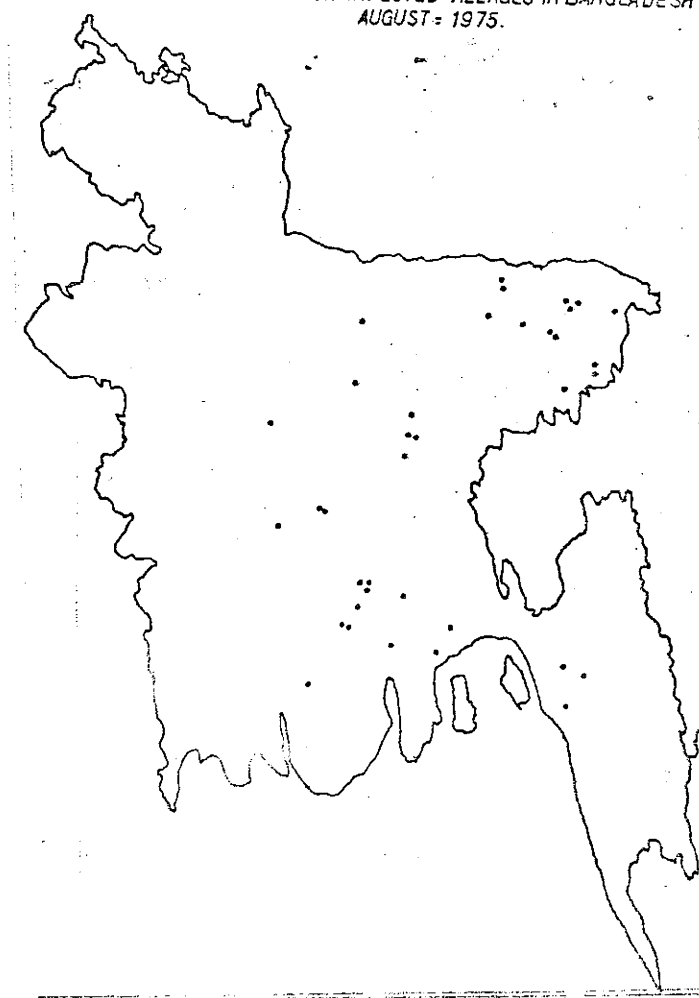
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
JUNE = 1975.



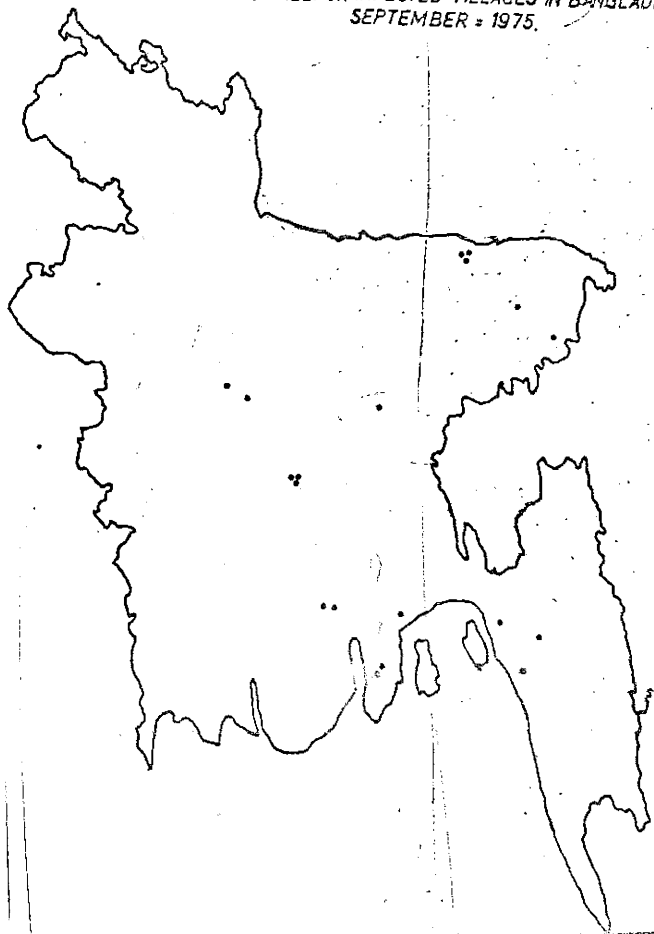
SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
JULY = 1975.



SMALLPOX INFECTED VILLAGES IN BANGLADESH  
AUGUST = 1975.

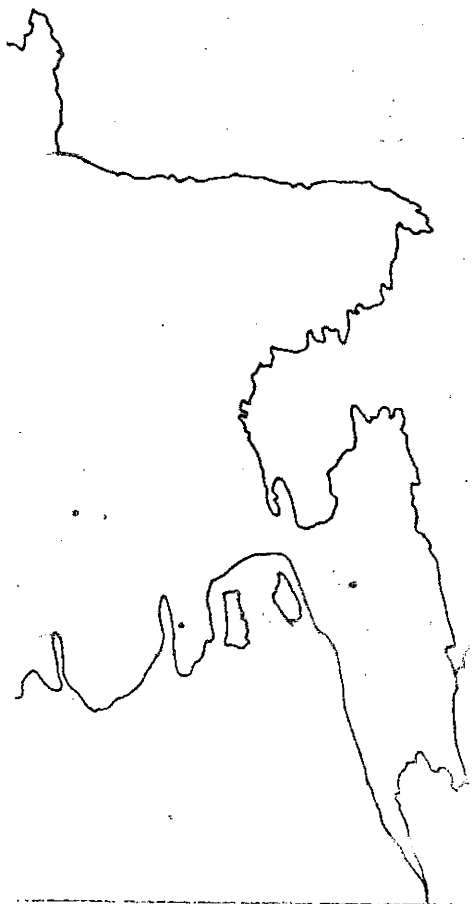


SMALLPOX INFECTED VILLAGES IN BANGLADESH  
SEPTEMBER = 1975.



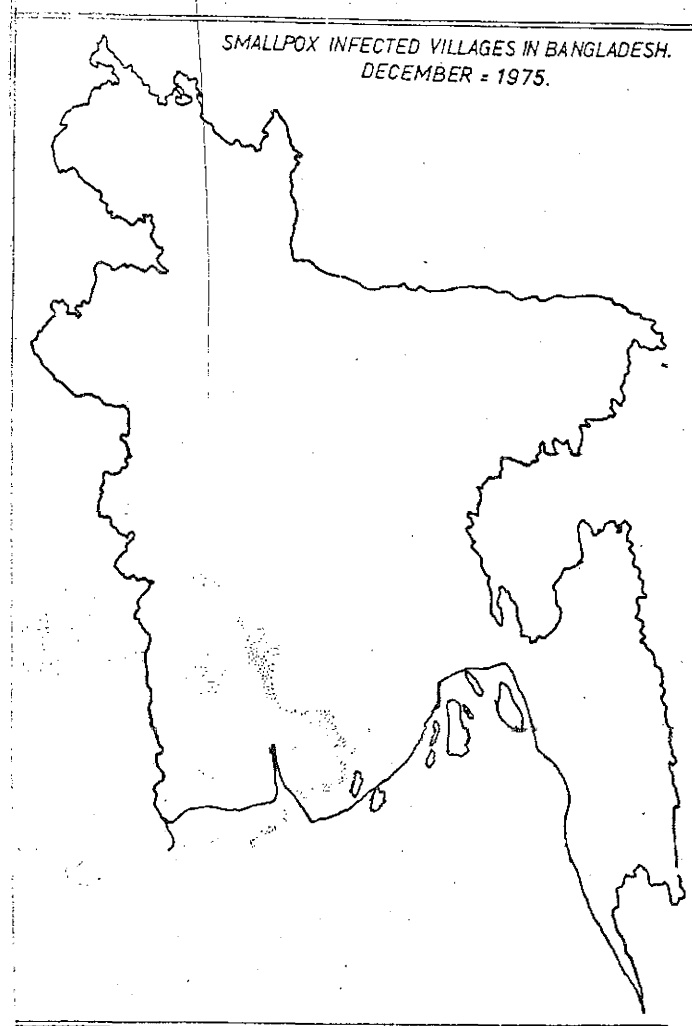


SMALLPOX INFECTED VILLAGES IN BANGLADESH.  
OCTOBER = 1975.



SMALLPOX INFECTED VILLAGES IN BANGLADESH  
NOVEMBER = 1975.





## LINE LISTING OF CHALLDOX OUTBREAK WITH DATES OF ATTACK AFTER 01 JULY 1975

Out-break number	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No	Followup diagnosis if different
1	Dinajpur	Tetulia	Prodhanbalabari	27/4	14/7	1/7	10	4						
2	Rangpur	Fulchari	Dhanarpara	15/7	9/8	15/7	1	0						
3	Bogra	Dhunot	Ulipur	29/6	5/7	1/7	3	0						
4	Pabna	Shazadpur	Chariapandal	10/6	18/9	1/7	3	1						
5	Pabna	Shazadpur	Gopinathpur	20/6	18/9	27/7	5	1						
6	Pabna	Kamarkandi	Borokura	4/7	16/11	3/8	2	1						
7	Pabna	Shazadpur	Pakurtala	10/7	17/9	15/8	5	2						
8	Pabna	Shazadpur	Nakra	15/7	15/9	13/8	2	1						
9	Pabna	Chowhali	Charchal Charshambudia	3/8	9/8	3/8	1	0						
10	Pabna	Ishurdi	Dikshail	18/9	2/10	18/9	1	0						
11	Pabna	Chatmohar	Panshuri	5/10	10/10	9/10	2	1						
12	Rajshahi	Mohadevpur	Purba Gosaipur	3/5	26/6	6/7	12	4						
13	Rajshahi	Paba	Harian	6/6	9/6	6/7	2	0						
14	Rajshahi	Mohadevpur	Rahimpur	16/6	26/6	5/7	3	2						
15	Rajshahi	Paba	Pikfikpara	26/6	7/7	14/7	2	0						
16	Kushtia	Kumarkhali	N. Bhawanipur	1/6	26/6	3/7	14	4						
17	Jessore	Sailkupa	Kripalpur	11/7	18/7	11/7	1	1						

Out-break number	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No/	Followup diagnosis if different
18	Khulna	Morrelganj	N.Phulhafa	6/7	17/7	17/7	1	1						
19	Faridpur	Goshairhat	Syed Basta	1/5	26/8	1/8	7	0						
20	Faridpur	Goalundo	Char Betka	7/6	16/7	19/7	7	3						
21	Faridpur	Palong	S.Kebalnagar	22/6	5/7	1/7	5	1						
22	Faridpur	Badarganj	Char Amrar	24/6	3/7	9/7	3	1						
23	Faridpur	Nagarkanda	Shodobara	25/6	10/8	5/8	3	0						
24	Faridpur	Bhedarganj	Raeu Rayerkandi	27/6	3/7	9/7	3	2						
25	Faridpur	Kotwali	Bil Mamudpur	12/7	17/7	12/7	1	1						
26	Faridpur	Kotwali	Baikalaman	12/7	18/7	12/7	1	1						
27	Faridpur	Goshairhat	S.Damudia	15/7	12/8	4/8	2	1						
28	Faridpur	Kotwalipara	Chitalia	15/7	13/9	18/8	2	0						
29	Faridpur	Kotwalipara	Ansil	5/8	18/10	15/8	2	1						
	Faridpur	Goshairhat	Shombokati	5/8	12/8	5/8	1	0						
31	Barisal	Bhola	Ramdaspur	18/3	20/8	27/7	21	11						
32	Barisal	Lalmohan	Lord Harding	29/3	10/9	28/8	43	9						
33	Barisal	Lalmohan	Char Titia	16/4	28/10	1/7	15	4						
34	Barisal	Char Fasson	Char Newton	27/4	16/10	2/7	5	3						
35	Barisal	Hizla	Gangapur	23/5	2/7	4/7	6	2						
36	Barisal	Babuganj	Brahmandia	2/6	20/7	28/8	8	1						

Out-break No.	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No	Follow-up diagnosis if different
37	Barisal	Mehendiganj	Kadirbad	10/6	7/7	17/7	8	0						
38	Barisal	Rajapur	Chattkali	15/6	29/9	1/8								
39	Barisal	Kotwali	Charkaunaganj	24/6	8/8	9/7	2	1						
40	Barisal	Gournadi	Mulapara	25/6	2/7	17/7	3	1						
41	Barisal	Daulatkhan	W.Joynagar	30/6	14/11	8/9	7	3						
42	Barisal	Wazirpur	Chaknam	1/7	4/7	2/7	1	0						
43	Barisal	Bhandaria	Middle Paikhali Paikerchar	5/7	10/7	22/7	2	0						
44	Barisal	Bhandaria	Paikhali	5/7	10/7	23/7	2	0						
45	Barisal	Hizla	Pabakandi	6/7	12/7	6/7	1	0						
46	Barisal	Lalmohan	Larsakina	7/7	28/10	7/7	1	1						
47	Barisal	Muladi	Char Kalekha	14/7	21/7	27/7	3	0						
48	Barisal	Lalmohan	Chandpur	1/8	10/9	7/9	4	0						
49	Barisal	Babuganj	Ramjankati	6/8	25/8	26/8	3	1						
50	Barisal	Char Fasson	Mohammedpur	7/8	15/10	7/8	1	0						
51	Barisal	Bhola	Kuralia	29/9	14/11	16/10	2	0						

Out-break No.	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No	Follow-up diagnosis if different
52	Mymensingh	Bhaluka	Chandobaw	21/5	26/7	19/7	3	0						
53	Mymensingh	Bhaluka	Pakhirchila	12/6	28/7	12/7	2	0						
54	Mymensingh	Mymensingh	Charbabanipur	15/6	6/8	1/8	3	2						
55	Mymensingh	Bhaluka	Jamirapara	16/6	26/7	1/8	3	1						
56	Mymensingh	Bhaluka	Jamirapara	16/6	26/7	1/8	4	1						
57	Mymensingh	Kamalkanda	Radhanathpur	26/6	6/7	8/7	2	0						
58	Mymensingh	Bhairab	Maghoonathpur	3/7	5/7	10/7	3	0						
59	Mymensingh	Mohanganj	Maggan	15/7	17/7	15/7	1	0						
60	Dacca	Dohar	Paschimpur	14/3	17/5	2/8	7	1						
61	Dacca	Rupganj	Newra	10/4	13/7	9/7	29	8						
62	Dacca	Monohordi	Harinarayanpur	25/6	19/7	12/7	3	0						
63	Dacca	Shibpur	Khankut	26/3	4/7	27/7	3	0						
64	Dacca	Baidyerbazar	Mirerbag	4/7	6/7	11/7	2	0						
65	Dacca	Araihazar	Kamrangirchar	6/7	10/7	6/7	1	0						
66	Dacca	Sripur	Dhaladia	7/7	8/7	7/7	1	0						
67	Dacca	Rupganj	Piprasair	11/7	17/7	11/7	1	0						
68	Dacca	Serajdikhan	Shekharnagar	11/7	22/7	11/7	1	0						



Out-break No.	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No	Follow-up diagnosis if different
69	Dacca	Raipura	Holakandi	16/7	19/7	16/7	1	0						
70	Dacca	Joydevpur	Tekibari	18/7	24/7	18/7	1	1						
71	Dacca	Narsindi	Paikerchar	21/7	24/7	21/7	1	0						
72	Dacca	Dohar	Silakota	25/7	29/8	23/8	4	0						
73	Dacca	Shibpur	Uttar Sadarchar	26/7	25/8	2/9	3	0						
74	Dacca	Harirampur	Nilgramchar	5/8	1/9	5/8	1	0						
75	Dacca	Dohar	Molikchar	28/8	17/9	28/8	1	0						
76	Dacca	Dohar	Kazirchar	1/9	15/9	1/9	1	0						
77	Dacca	Manikganj	Buriajani	5/9	16/9	15/9	1	0						
78	Sylhet	Habiganj	Josharabda	8/5	12/5	5/7	10	4						
79	Sylhet	Gowainghat	Lamni	12/5	26/6	4/7	10	2						
80	Sylhet	Beani Bazar	Khotokalirpur	6/6	13/8	24/7	3	1						
81	Sylhet	Srimongal	Badal Alisha	13/6	2/7	2/7	1	0						
82	Sylhet	Balaganj	Darkan	13/6		1/7	2	0						
83	Sylhet	Gowainghat	Jangail		26/6	1/7	2	0						
84	Sylhet	Sunamganj	Kayergaon	14/6	5/7	3/7	2	0						
85	Sylhet	Dera	Jagdhal	15/6	29/7	9/8	9	0						
86	Sylhet	Kulaura	Brahmanbazar	16/6	12/8	8/8	6	0						
87	Sylhet	Dharampasha	Kajirgaon	16/6	6/7	14/7	4	1						

Out-break No.	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No	Follow-up diagnosis if different
88	Sylhet	Gowainghat	Nayapara	16/6		1/7	2	1						
89	Sylhet	Kulaura	W. Monsur	18/6	24/6	27/7	3	1						
90	Sylhet	Barlekha	Bhobanipur	24/6	8/6	3/7	3	0						
91	Sylhet	Gowainghat	Purnosogram	29/6		8/7	3	1						
92	Sylhet	Maulvi Bazar	Ghagutta	30/6	18/7	8/7	2	0						
93	Sylhet	Tahirpur	Chararpar	4/7	9/7	4/7	1	0						
94	Sylhet	Habiganj	Ashora	4/7	8/7	9/7	1	0						
95	Sylhet	Jamalganj	Chandpur	10/7	10/7	10/7	1	0						
96	Sylhet	Balaganj	Matiani	14/7	16/7	14/7	1	0						
97	Sylhet	Kamalganj	Uttarbagh	16/7	18/7	16/7	1	0						
98	Sylhet	Sunamganj	Borampur	17/7	10/8	20/8	13	2						
99	Sylhet	Jagannathpur	Nadampur	17/7	13/8	17/7	1	0						
100	Sylhet	Balaganj	Didarai	26/7	3/8	26/7	1	0						
101	Sylhet	Sylhet	Masimpur	1/8	6/8	12/8	7	1						
102	Sylhet	Sylhet	Barakhandi	1/8	5/8	13/8	2	0						
103	Sylhet	Sunamganj	Shimalbagh	8/8	20/8	24/8	2	0						
104	Sylhet	Balaganj	Akupur	11/8	27/8	3/9	2	0						
105	Sylhet	Kulaura	Krishnanagar	18/8	27/8	18/8	1	1						
106	Sylhet	Sunamganj	Kuratoli	28/8	2/9	28/8	1	0						

				INITIAL INVESTIGATION							REINVESTIGATION			
Out-break No.	District	Thana	Village	Date first attack	Date detec-tion	Date last attack	C	D	Lab. results	Diag-nosis	Date	By	New SP in-formation Yes/No	Follow-up diagnosis if different
107	Sylhet	Chaatak	Labour Camp	17/9	18/9	17/9	1	0						
108	Comilla	Brahmanbaria	Nairpur	14/6	3/7	14/7	2	0						
109	Comilla	Nasinagar	Noorpur	17/6	22/6	14/7	2	0						
110	Comilla	Lakshan	Salipur	22/6	7/7	11/7	5	2						
111	Noakhali	Feni	Charnua	7/6	2/7	8/7	9	2						
112	Noakhali	Feni	Kashimpur	25/6	2/7	12/7	2	0						
113	Noakhali	Feni	Dondona	25/6	1/7	11/7	4	0						
114	Noakhali	Begumganj	Alipur	25/6	30/6	6/7	3	0						
115	Noakhali	Ramgati	Char Falcon	25/6	8/8	8/9	11	0						
116	Noakhali	Kotwali	Shalupur	5/7	7/7	18/7	2	0						
117	Noakhali	Begumganj	Alampur	6/7	8/7	6/7	1	0						
118	Noakhali	Feni	Lakshmipur	10/7	17/7	10/7	1	0						
119	Noakhali	Feni	Shatshoty	12/7	17/7	12/7	1	1						
120	Noakhali	Senbagh	N. Suhapur	28/7	2/8	13/8	3	0						
121	Noakhali	Raipura	Udmara	1/8	8/8	1/8	1	0						
122	Chittagong	Raozan	Kazirpara	2/6	7/8	4/8	8	1						
123	Chittagong	City	Mogholtuli	6/6	8/7	17/7	3	0						
124	Chittagong	Municipality	Rly. Street	16/6	20/7	4/7	3	0						
125	Chittagong	Raozan	Ukrichar	8/7	12/7	8/7	1	0						

Out-break No.	District	Thana	Village	INITIAL INVESTIGATION							REINVESTIGATION			
				Date first attack	Date detection	Date last attack	C	D	Lab. results	Diagnosis	Date	By	New SP information Yes/No	Follow-up diagnosis if different
126	Chittagong	Hathazari	N. Madarsha	10/7	12/7	10/7	1	0						
127	Chittagong	Sitakundu	New Rajapur	14/7	16/7	14/7	1	0						
128	Chittagong	Hathazari	Burichar	19/7	27/7	27/7	2	0						
129	Chittagong	D.Mooring	W.Madarbari	27/7	4/8	27/7	1	0						
130	Chittagong	D.Mooring	Halishahar	20/8	23/8	20/8	1	1						
131	Chittagong	Raozan	Sheikpara	27/8	2/9	15/9	3	0						
132	Ctg. H.T.	Kaptai	Kaptai	15/6	18/7	1/7	2	0						

4.10.1 THE FIRST LAST SMALLPOX OUTBREAK - RAUZAN THANA - CHITTAGONG  
BANGLADESH

Thana	Village	Date first attack	Date detection	Date last attack	Cases	Deaths	SOURCE
Chittagong City	Alkaran	22/1	1/2	4/3	6	1	? Dacca
Sitakunda	IDH						Alkaran
Rauzan	Maishkaram	16/3	8/7	23/6	7	2	IDH - Alkaran
Rauzan	Urkichar	8/7	12/7	10/7	1	0	Maishkaram
Hathazari	N. Madarsha	10/7	12/7	10/7	1	0	Maishkaram
Hathazari	Burichar	11/7	18/7	27/7	2	0	Maishkaram
Rauzan	Kazipara	23/6	7/8	4/8	11	1	Maishkaram
Rauzan	Sheikpara	27/8	2/9	15/9	3	0	Kazipara

During the July 1975 house to house search for smallpox, a Family Welfare Worker in Rauzan Thana Chittagong District obtained information in Urkichar village of a possible smallpox outbreak in Maishkaram village 2 miles away. Investigation of this report on 8 July identified an undetected smallpox outbreak with seven cases, the last of which had occurred on 23/6. Containment and epidemiologic investigation were immediately instituted.

The index case of the Maishkaram outbreak was a 3 year old boy who visited the Chittagong IDH from March 2-5 where his sibling was hospitalized with diptheria. He was vaccinated on arrival but vaccination was unsuccessful.

The source of infection was clearly the Chittagong IDH where a smallpox patient had been hospitalized from an outbreak in Chittagong Municipality. The first case in this municipal outbreak occurred in a 10 month old baby with no definite source. As his infection occurred at a time when Chittagong was smallpox free and three weeks after the destruction of a smallpox infected bastee in Dacca City, Kawran Bazar in Dacca city was the probable but unconfirmed source of this municipal outbreak.

On 12/7 two additional villages were found infected with smallpox. One smallpox case was detected in Urkichar during local search with a date of attack on 8/7. This case, a young boy, had direct contact with Maishkaram where he served as a guard for his father's baby taxi when it was parked at night near the infected house. North Madarsha village with date of attack 10/7 was found through contact investigation of relatives, in this case a grand mother, who had previously visited the infected house.

On 8/7 members of the public informed the resident supervisor in Maishkaram of an outbreak in Burichar. A smallpox case was detected in a 5 year old boy who had visited the infected house in Maishkaram.

Containment was instituted in these three new infected villages. On about August 1, the public informed local health staff of a possible outbreak in Kazipara. Investigation by the Thana Health Administrator, Malaria Inspector, and Sanitary Inspector diagnosed the mild rash cases as chickenpox. During a field inspection of the Rauzan outbreak by the Assistant Director for Smallpox, the Kazipara chickenpox outbreak including one "chickenpox death" was reported. Reinvestigation of Kazipara on 7/8 revealed a recent severe typical smallpox case. Laboratory confirmation was obtained and the source was traced to a visitor to Maishkaram. Containment was instituted and search carried out.

On 2/9 the Kazipara resident supervisor received a report from the public of a suspect smallpox case in Sheikpara. Sheikpara including the house next to the smallpox infected house had been searched on 28/8 without report. One smallpox case with date of attack 27/8 was found. Although frequent contact between the index case in Sheikpara and Kazipara including the borrowing of a fish net was documented, direct face to face contact with a smallpox case was not established. As this was the only transmission in this series of outbreak to occur after detection, it had to be classified as a containment failure. It is postulated that exposure occurred on 15 August, the day of the Military coup when Sheikh Mujibur Rahman was killed. It is postulated that the house guard system failed during the coup curfew.

Containment procedures instituted in Sheikpara were similar to those in other infected villages. With detection of the village three local residents were trained and appointed as house guards. They had three responsibilities : the isolation of the patient, the vaccination and daily surveillance of family member, and



listing and vaccinating of all visitors. Vaccination of the local area was completed by a 8-man containment team and a 5-man surveillance team. On the night of detection a wedding was held within 200 yards of the infected house. All attendants at the wedding were listed, vaccinated, and followed up in their home villages subsequently. On completion of vaccination of the  $\frac{1}{2}$  mile area 2 paraguards were appointed to daily record all fever cases. Fever cases were followed twice daily for rash. During the period 3/9 - 30/10, 365 cases of fever were detected in 130 houses. Duration of fever is tabulated in Table-I. Two additional smallpox cases occurred in Sheikpara on 11/9 and 15/9 in household contacts of the first case.

TABLE-I

Fever Cases Sheikphara Village Rauzan Thana Chittagong.

<u>Duration of Fever</u>	<u>Number</u>
1 - 3 days	148
4 days	120
5 -12 days	97
Total	365

All 228 residents living in 38 houses within 100 yards of the infected house were found and vaccinated Table-II.

TABLE -II

100 Yard contacts of smallpox infected houses Sheikpara village Rauzan Thana Chittagong

Age	Male	Female	Total
0 - 1	2	5	7
1 - 4	16	21	37
5 -14	38	30	68
15+	60	56	116
Total	116	112	228

Of the 3865 population enumerated in the  $\frac{1}{2}$  mile area 3550 were vaccinated Table-III.

TABLE-III

Age	Male		Female		Total	
	Number	%	Number	%	Number	%
0 - 1	50	100	49	100	99	100
1 - 4	309	100	266	100	575	100
4 - 14	611	98.4	561	99.8	1172	99.5
15+	1143	82.2	876	89.6	2019	85.4
Total	2213	86.1	1752	94.4	3865	92.0

All  $\frac{1}{2}$  mile residents with recent village exposure were followed up through cross notification. Market and school searches were carried /in 9 different villages. Three searches of all villages /out in the 5 mile area around Shaikpara were carried out Round 1 (5/9 - 7/9) Round 2 (16/9 - 17/9) and Round 3 (29/9 - 30/9).

A fourth check was carried out in October and the village was declared free on 31/10/75.

# LINE LISTING OF PATIENTS IN SHBIKPARA

Sl. No.	Thana	Village	Patient
1.	CTG. Municipality	Alkaran	Zinatunessa
2.	" "	"	Md Aslam
3.	" "	"	Md Forkan
4.	" "	"	Arif Billa
5.	" "	"	Mozibur Rahman
6.	" "	"	Ayesha Khaton
7.	Raozan	Maikaram	Nurul Absar
8.	"	"	Khodiza
9.	"	"	Pakhi Begum
10.	"	"	Rezia Begum
11.	"	"	Khorsheda
12.	"	"	Azizul Hoque
13.	"	"	Sirajul Haq
14.	Raozan	Urkichar	Shamsul Alam
15.	Hathazari	North Madrasha	Laila Begum
16.	Raozan	Burischar	Nurul Absar
17.	"	"	Mur Banu

# CHAIN OF TRANSMISSION

Age	Sex	Date of rash	Date of detection	Date of Hospitaliz	Source of infection	Type of contact	Remarks
10 months	F	22/1/75	1.2.75	No	? (1)	?	
15 years	M	26/1/75	1/2/75	1/2/75	? Comilla (2)	?	
6 "	M	12/2/75	3/4/75	23/2/75	Alkaran	R.I.H.	
10 months	M	17/2/75	1/3/75	22/2/75	"	V.I.H.	
4½ years	M	28/2/75	21/3/75	5/3/75	"	V.I.H.	
5½ "	F	"	"	No	"	V.I.H.	Died
3 years	M	16/3/75	8.7.75	No	I.D.H.	V.I.H Hosp	
9 months	F	7/4/75	"	No	Maiskaram	R.I.H.	
6 years	F	7/5/75	"	No	"	A.P.V.H.	
16 years	F	14/5/75	"	No	"	R.I.H.	
7 years	F	1/6/75	"	No	"	V.I.H.	
3 "	M	21/6/75	"	No	"	V.I.H.	Died
6 "	M	23/6/75	"	No	"	R.I.H.	Died
15 years	M	8.7.75	12/7/75	No	Maiskaram	V.I.H.	Died
40 years	F	10/7/75	12/7/75	No	Maiskaram	V.I.H.	
8 years	M	11/7/75	18/7/75	No	Maiskaram	V.I.H.	
7 "	F	27/7/75	27/7/75	No	Local	R.I.H.	

# LINE LISTING OF PATIENTS IN SHEIKPARA CHAIN OF TRANSMISSION

Sl.	Thana	Village	Patient	Age	Sex	Date of rash	Date of detection	Date of Hospitalization	Source of infection	Type of contact	Remark
18	Baozan	Kazirpara	Renu Begum	5 years	F	26/6/75	7/8/75	No	Maikaram	V.I.H.	
19.	"	"	Jahanara	6 "	F	20/6/75	"	No	Local	V.I.H.	
20.	"	"	Shahana Begum	2½ "	F	30/6/75	"	No	"	R.I.H.	
21.	"	"	Md Idrish	10 "	M	9/7/75	"	No	"	R.I.H.	
22.	"	"	Saifuddin	5 "	M	13/7/75	"	No	"	V.I.H.	Died
23.	"	"	Masina Begum	6 "	F	26/7/75	"	No	"	R.I.H.	
24.	"	"	Badrun Nur	4 "	F	2/8/75	"	No	"	V.I.H.	
25.	"	"	Baby Akhtar	3 "	F	4/8/75	"	No	"	V.I.H.	
26.	Baozan	Sheikpara	Sona Miah	18 "	M	27/7/75	2/9/75	2/9/75	Kazirpara	V.N.I.H.	
27.	"	"	Zohra	1 "	F	10/9/75	11/9/75	No	Local	R.I.H.	
28.	"	"	Sakina Begum	2 "	F	15/9/75	3/9/75	3-9/9/75	"	R.I.H.	

## Explanatory Notes :

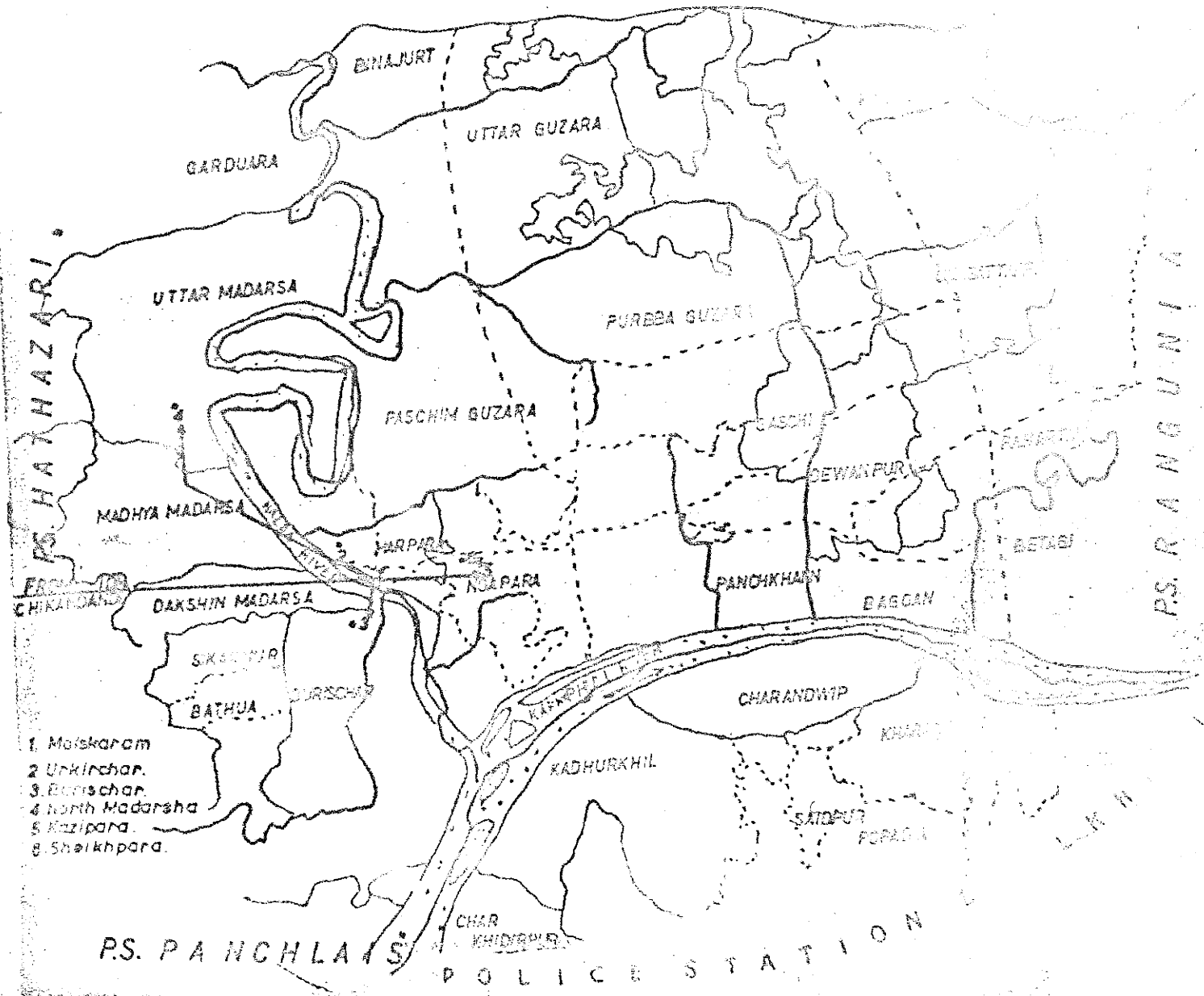
V.I.H. = Visited Infected House  
R.I.H. = Resident Infected House  
V.N.I.H. = Visited near Infected House  
A.P.V.H. = Active Patient Visited House

1 = No source established

2 ? Comilla = Home address : vill- Jibanpur, P.S. Barura, Comilla. Patient claims he had not visited home address during month prior to attack. Conclusion : Source unestablished.

3 Nurul Absar = previously thought to have been a diphtheria patient at I.D.H. Now known to be only a visitor to I.D.H. on 2.3.75 - 5.3.75. At that time there were 3 active smallpox cases at I.D.H. being Sl Nos 3 and 6 above and also Abdul Halim 32 yrs (place of contact Chandpur, Comilla).

CHAIN OF TRANSMISSION "FIRST  
LAST" SMALLPOX OUTBREAK  
CHITTAGONG DISTRICT 1975



On 14 November 1975, the world press was informed that Bangladesh, Asia, and the World were for the first time in human history free of Variola Major, the severe form of smallpox. On 15 November, Smallpox Zero, the Control Room of the Bangladesh Smallpox Eradication Program in Dacca received a cable from the SDMOH Bhola Barisal reporting one case of suspect smallpox in Kuraila village. On 16 November three epidemiologists set off on the 24 hour trip to Bhola. The field notes of one of these epidemiologists sets the scene.

NOTE : The telegram to Smallpox Zero was cryptical. One smallpox case. But how could there be only one case at Bhola when the last case had been reported there two months before. There had to be more. Yet Shahabuddin who knew smallpox, was in Bhola and had probably seen the case.

But still I thought it would be chickenpox. I brought only enough clothing for a few days. Only a reflex reaction made me take my bedding. Perhaps a memory of an experience in Ethiopia where I was supposed to be going to check some chickenpox cases for a day or two, and wound up staying in the field for 50 days when the chickenpox cases turned out to be smallpox, made me take my bedding - just in case. But I was almost sure it would be chickenpox.

It is always exciting, frightening, a bit awesome to be called into confirm a smallpox or chickenpox diagnosis. It always raises the adrenalin to have to come in and make the final decision. It was much easier a year or two ago when I only had to say "that's smallpox, let's begin containment". There were so many cases and reports to check that the diagnosis had to be quick, efficient and with no time for second thoughts. But now, being called in to check the difficult cases to diagnose, the question has been turned around. I have to say "I'm sure that's not smallpox, no need to do containment". Am I 100 percent sure that it is not smallpox ? Is it possible that this is a modified case that will only turn up after one or two generations in a typical smallpox rash ?

All these thoughts were going through my mind on the walk out to the infected house. It was a half mile from the place we left the landrover to the house. Would it be a difficult call - a slight rash, no vaccination scar, with an old man in the next house with a severe rash and an old vaccination ? Would it be a clearcut case of chickenpox with different stages of rash and a clear recent vaccination scar ? Would it be apparently chickenpox, but with the 2 percent doubt that would necessitate full containment and the mobilization of 100s of people for weeks ? The longer the walk to the house, the more time to think. The big zero on the outbreak board in Dacca that had been staring down at us throughout the meeting two days before continued to stare down.

Walking to the house, we passed by the quiet, peaceful, sleeping houses. Children came out to watch this strange procession of foreigners and well-dressed officers. Would this case be smallpox, and change the life of all the people living within five miles of the house. Would these same children soon be running away from vaccinators. Would the vaccinators and searchers start to come every day to these houses to check for newcomers, unvaccinated people and fever and rash cases ? Would many more foreigners, officers, Hondas, landrovers, come into their quiet restful lives to temporarily disturb the tranquility for 1½ months ?



All the thinking and fearing turned out to be unnecessary. It was a clear cut case of smallpox. The scar distribution was typical, some smallpox scabs could be seen on the foot sticking out from under the blanket.

Containment had been initiated by the Surveillance Team at the time of detection on the 14th of November. With the confirmation of the diagnosis as smallpox on 17th November, the number of house guards was increased from two to six including a resident supervisor and the patient's father. By putting the father on 24 hour duty, his escape from the village was prevented. Night vaccination of the area was immediately undertaken by flashlight, wick lamp, and kerosene lanterns and continued on until 2 A.M.

On 18 November six containment teams were formed each with one full time health worker and one locally hired volunteer. Each team was given an area and a code letter SPA, SPB, SPC etc. Team-A numbered all its assigned houses serially SPA<sup>1</sup> SPA<sup>2</sup> SPA<sup>3</sup> etc. At each house a line listing of all residents including absentees was prepared, vaccination performed by standard bifurcated needle technique, and recorded. 30-60 houses were completed. Four registers were opened (1) informations and rumours of smallpox obtained during 5 mile and market search, (2) list of fever cases detected on daily follow up visit to all houses within 1 mile, (3) a cross notification list of all visitors and absentees within the 1 mile and (4) a list of all contacts and relatives of the infected bari.

A map was prepared of all villages within the five mile area and responsibility for a total house to house search was assigned to the surveillance team.

A room in the SDMOHs office was taken over as Bhola control and radio contact established with Dacca. Three additional epidemiologists, six surveillance teams, Hondas, bicycles were requested on an urgent basis. Two days later a chartered launch arrived at Bhola dock with the requested personnel equipment and supplies.

On 22.11.75 it was determined that the vaccination program within the 1½ mile radius of the focus area was moving too slow and not producing the desired results. Thereupon, the following day, the house to house search beyond the 1½ mile radius was discontinued and all 25 supervising and field staff intensified the vaccination program. Starting from the infected house, and working in a centrifugal fashion, all inhabitants were checked for recent smallpox vaccination and, if not apparent, either vaccinated or revaccinated, as the case may be. Two "night raids" i.e., entering the bari after dark using kerosene lamps, were conducted to ensure vaccination coverage. On 27.11.75 the intensified mass vaccination program was completed with an independently complete assessed 95% immunity level established.

During this five day period (23/11 to 27/11) a five-man Surveillance Team, composed of three Dacca Surveillance Team Members (STMs) and two Netrokona STMs, nicknamed "Dac-Net" reinvestigated (1) the list of over forty relatives and contacts of the infected house, checking for fever, rash, rash deaths and vaccination takes (2) the list of informations reported in the Kuralia outbreak Rumour Register and (3) the list of informations recorded in the Bhola thana rumour register during the preceding three months.

In addition, the SDHI and the WHO Outbreak Supervisor were engaged in the daily checking of all recorded fever cases, as well as investigating all reported rash cases.

On 24.11.75, the last known case of variola major was declared fully cured. The house guards were not dismissed until the incubation period of all members of the infected house hold, had elapsed. After the dismissal of the houseguards on 30.11.75, the SDHI remained at the outbreak camp site to supervise containment activities.

On 28.11.75 an intensified house to house search for smallpox of the five mile radius was resumed. All EFWs and FWWs (total 33) were divided into five teams and placed under the leadership of one "Dac-Net" Surveillance Team Member. Overall supervision was maintained by the SDHI. All field workers enquired at each bari about the presence of any fever cases, smallpox cases, or rash deaths, they announced the 500 taka reward, and explained where any pertinent information could be reported. In addition, before leaving the bari, at least one house was chalked in white with the slogan "500 taka reward" signed and dated.

On 3.12.75, the 5 mile house to house search for pox cases, fever, rashes, and rash deaths was completed. Each information of rash, fever, pox or rash deaths was investigated by SDHI Chittagong and WHO outbreak supervisor. No new cases of smallpox were detected.

On 4.12.75 a second house to house search in the five mile area was initiated. The Search Teams were rotated so that each team was assigned a new area or cluster of villages. This search was completed on 8.12.75 with no new cases of smallpox detected.

On 28.11.75 the Bhola Surveillance Team (4 members) was deputed to visit all private practitioners, schools, tea stalls, bazars, and markets within the five mile area. Market searches proved to be the most useful method for collecting informations each of which was then thoroughly investigated. All pieces of information were recorded in the Bhola Thana Rumour Register and investigated and if the case warranted, reinvestigated by a WHO Epidemiologist.

While "containment" around Kuralia was going on, an additional 16 EFWs were engaged to establish "checkposts" in Bhola Municipality. Each EFW wore a light punjabi type shirt which identified him as a smallpox worker to the public. The punjabi shirt was marked "500 Taka reward". Five 2-man checkposts were located in prominent places, i.e., bus station, ferry ghat cross roads etc. where the travelling public converged. The remaining 6 EFWs were given daily assignments to search in specific areas of the municipality. Information was regularly collected by a Bhola STM using a Honda. Public information about smallpox the reward and where to report was spread by rickshaw megaphone, posters, and banners. A public ceremony in which the subdivisional officer publicly presented the reward to the public informers of the Kuralia outbreak also spread the word. The mobile EFWs reported to Bhola smallpox headquarter every morning. Informations received by these 16 EFWs were investigated by a STM or WHO epidemiologist and results recorded in the Bhola Thana Rumour Register. No new cases of smallpox were detected. This municipal program began around 26.11.75 and ended on 8.12.75.

#### SPECIAL SEARCHES

In all seven thanas of Bhola subdivision "special" house to house searches were conducted under the guidance of an epidemiologist and a senior Surveillance Team Leader. These searches were special in the fact that each FWW was assigned 125 houses per day to search. This lengthened the searches from eight to twelve days. The THA, TSO, MI, AMI and ANI of each thana did continuous field supervision. These searches began on 27.11.75.

#### BHOLA THANA

The special house to house search in Bhola thanawas conducted by 24 FWWs and lasted ten days. The chalking method was employed throughout the thana. This thana was under the supervision of the WHO Outbreak Supervisor, and owing to the large number of villages located in the containment area, very few problems arose.

#### DAULATKHAN THANA

The house to house search in Daulatkhan was completed in 8 days and was under the direct supervision of a WHO National Epidemiologist. Two Netrokona Surveillance Team members assist in the re-investigation of all rumours and cross-notifications in the preceding three months. In addition, a large earth embankment constructed to hold back the flooding waters of the Meghna river was specially searched to ensure no smallpox was among the "bastee" population living there. The father of the last variola major case, and his son, the second to last smallpox case, were engaged to improve the dialogue between the health workers and the suspicious public. Many of the public believed that the large 500 taka reward was offered to detect smallpox patients who were then subsequently burned in their home by smallpox workers. After hearing about the good treatment WHO accorded the last case of smallpox and seeing the living proof of a cured smallpox case, many of the public gave information leading to the detection of hidden chickenpox cases. The thana program was completed on 7/12/75.

#### BURHANUDDIN, TAZUMUDDIN AND MANPURA THANAS

In each of these thanas, the special house to house search was completed by all available FWWs. When there was a vacant subsector, EFWS were engaged. An intensified surveillance program was launched by a third WHO Epidemiologist with 7 members of the Dacca Surveillance Team, all equipped with motor bikes. This team visited 90% of the area defined. Manpura Island was searched throughout for 4 days. In addition, the surveillance team conducted market searches, and collected informations at ferry ghats. The list of all informations in the thana rumour books was reinvestigated as were all informations received of rash with fever, and rash deaths.

On 7.12.75, this search program was completed. High risk areas were noted as those being on the eastern shoreline of Burhanuddin and the Hindu population in Tazumuddin and Burhanuddin.

#### LALMOHAN AND CHAR FASSON THANAS

These two most southern thanas were under the combined supervision of the fourth WHO Epidemiologist and an SI and Surveillance Team Leader on deputation from Dacca. The special house to house search was started on 27.11.75 and completed on 4.12.75. All new informations concerning rash and pox deaths were followed up by the two supervisors.

In addition, the mobile Rangpur Surveillance Team searched all markets, bazars, ferryghats and collected over two hundred informations which were duly investigated. Their program ran from 23.11.75 to 7.12.75 on which day they embarked for Rangpur district. On 10.12.75, a second Dacca Surveillance Team was despatched by speedboat to finish searching the lower reaches of Char Fasson P.S.

#### MADUSHI RIVERINE SEARCH

On 4.12.75, a special riverine search of the western shore of Bhola subdivision was initiated the Bhola Surveillance Team using two speedboats under the supervision of a fifth epidemiologist.

The Madushi, a converted X-Ray Launch, piloted by a crew of six, began a methodical cha-by-char, village-by-village, bari-to-bari, house-to-house search that resulted in the detection of a previously unreported smallpox outbreak on Char Beduria in 1974 (18 cases 6 deaths). Two way radio communication between the Madushi and Bhola Headquarters enabled the supervising Epidemiologist to confirm or establish final diagnosis of rash deaths and difficult pox cases. A fourteen day program enabled the Madushi to complete the western shore and extend into the northern shore of Barisal district Sadar subdivision. After which the Meghna delta area was investigated for recent rash deaths and knowledge of reward. No new smallpox cases were reported : however, on Char Mohammed Ali an old previously unreported smallpox case was detected with a date of attack July 1975, source-Ramdashpur. On 23 December the Madushi Riverine search was called to a halt.

#### DETECTION OF THE KURALIA OUTBREAK

On 6.11.75 the Bhola Surveillance Team in carrying out a routine search of markets received information of an outbreak in Katali village. Investigation of this village and source tracing identified the following chain of transmission.

Thana	Village	Date first attack	Date detection	Date last attack	C	D	Source
Bhola	Chandraprasad	2/3	6/11	16/3	2	0	Importation-woman with smallpox from Chittagong
	Shachia	23/3	6/11	7/4	2	0	"Beauty" infected in Chandraprasad travelled home and developed rash
	Katali	7/4	6/11	18/6	8	3	Shah Noor infected at Shachia travelled to Katali

A five mile search was carried out around each of these infected villages. During a tea break at Bangla Bazar an information of a rash death in West Joynagar was obtained.

Investigation of this report identified an outbreak of 7 cases and three death. The West Joynagar outbreak had been previously reported as suspect smallpox to TSO Daulatkhan. Investigation had been carried out by an FWW and was reported as measles.

Thana	Village	Date first attack	Date detection	Date last attack	C	D	Source
Daulatkhan	W. Joynagar	30/6	13/11	9/9	7	3	?

During the investigation of W. Joynagar an additional report of rash in Milton of Siddique Chowkidar Bari Kuralia was obtained. On visiting this house, Milton was absent. His family, however, reported smallpox in a nearby Bari. Investigation of this report revealed Rahima Banu hidden in a corner under a blanket with a scab covered foot protruding. A case in a brother age 12, date of attack 29/9 was also detected.

Containment was instituted and Civil Surgeon and Smallpox Zero notified.

During the intensive area search of Bhola one additional village Char Lanchipata was detected. This village also had a source of infection from Chandraprasad.

Thana	Village	Date first attack	Date detection	Date last attack	C	D	Source
Daulatkhan	Char Lanchipata	18/4	18/11	27/6	13	4	Chandraprasad

Repeated epidemiologic investigations have failed to document a face to face contact source for both West Joynagar and Kuralia. West Joynagar is only  $\frac{1}{2}$  mile distant from Kuralia and indistinct family relationships exist between the two infected houses. It is assumed that Haris, a 10 year old boy, the first case in Kuralia visited the house of the last West Joynagar case at about the time of his death of 18.9.75. The source of infection for West Joynagar is not clear. Although both Katali and Char Lanchipata are possible sources the specific contact, a missed case, another village, a beggar has not yet been identified.

4.11.1 AGE SEX DISTRIBUTION OF 1928 SMALLPOX CASES EWRA DISTRICT WATKINSONSH 1975

Age	MALES			FEMALES			TOTAL		
	Number* of cases	Percent distri- bution	Expected** distri- bution	Number* of cases	Percent distri- bution	Expected** distri- bution	Number* of cases	Percent distri- bution	Expected** distri- bution
0 - 1	56	2.9	2.2	44	2.3	2.2	100	5.2	4.4
1 - 5	186	9.6	6.4	218	11.3	6.1	404	21.0	12.5
6 - 10	214	11.1	9.0	224	11.6	8.7	438	22.7	17.7
11 - 20	201	10.4	12.0	171	8.9	10.6	372	19.3	22.6
21 - 30	92	4.8	5.0	127	6.6	8.1	219	11.4	13.1
31 - 40	96	5.0	5.8	88	4.6	6.0	184	9.5	11.8
41 - 50	53	2.7	4.3	55	2.8	3.5	108	5.6	7.8
51 & above	54	2.8	5.7	49	2.5	4.4	103	5.3	10.1
TOTAL	952	49.4	50.4	976	50.6	49.6	1928	100.0	100.0

\* Source : Mourad et al

\*\* Source: Chowdhury Aziz Mosley - Demographic studies in Rural East Pakistan 1970

## 4.11.2 AGE SEX SMALLPOX MORTALITY OF 1928 SMALLPOX CASES BOGRA DISTRICT BANGLADESH 1975

Age	MALES			FEMALES			TOTAL		
	Number of cases	Number of deaths	Percent mortality	Number of cases	Number of deaths	Percent mortality	Number of cases	Number of deaths	Percent mortality
0 - 1	56	35	62.3	44	19	43.2	100	54	54.0
1 - 5	186	28	15.3	218	44	20.2	404	72	17.8
6 - 10	214	27	12.6	224	35	15.6	438	62	14.2
11 - 20	201	25	12.4	171	13	7.6	372	38	10.2
21 - 30	92	10	10.9	127	22	17.3	219	32	14.6
31 - 40	96	27	28.1	88	12	13.6	184	39	21.2
41 - 50	53	11	20.8	55	10	18.2	108	21	19.4
50 & above	54	15	27.8	49	13	26.5	103	28	27.2
TOTAL	952	178	18.6	976	168	17.2	1928	346	17.9

\* Source : Mourad et al



4.11.3 AGE SEX DISTRIBUTION OF INDEX CASES IN 489 SMALLPOX OUTBREAKS BOGRA DISTRICT  
BANGLADESH 1975\*

Age	Males			Females		
	Observed number	% Distri- bution	Percent** expected	Observed number	% Distri- bution	Percent** expected
0 - 1	1	0.2	2.2	3	0.6	2.2
1 - 5	15	3.1	6.4	24	4.9	6.1
6 - 10	34	6.9	9.0	42	8.6	8.7
11 - 20	81	16.6	12.0	36	7.4	10.6
21 - 30	72	14.7	5.0	33	6.7	8.1
31 - 40	51	10.4	5.8	29	6.0	6.0
41 - 50	19	6.3	5.7	6	1.2	4.8
Total	304	62.2	50.4	185	37.8	49.6

\* Source : Mourad et al

\*\* Source : Choudhury Aziz Moslem - Demographic studies E. Pakistan



# 5.1 PRIMARY AND REVACCINATION 1961 - 1975

Year	Primary	Revaccination	Total
1961	373700	22070000	25807000
1962	3508661	24155279	27662940
1963	2545950	19481460	22027410
1964	1490260	18104256	19594516
1965	1505325	18244881	19750206
1966	2041032	26296651	28337683
1967	2265514	2647486	28740374
1968	NA	NA	32827474
1969	1974018	29636028	31610046
1970	1601753	16991061	18592814
1971	432078	5834571	6266649
1972	2495514	34215442	36710956
1973	3660491	33237402	36897893
1974	4453653	10668763	15122416
1975	5773118	17905511	23678629

5.2 SMALLPOX VACCINATION SURVEYS 1958, 1972, 1976  
(Population in 1000s)

5.2

District	1958			1972			1976		
	Population <sup>1</sup>	Percent <sup>2</sup> Vacc.	Number susceptible	Population <sup>3</sup>	Percent <sup>4</sup> vacc.	Number susceptible	Population <sup>5</sup>	Percent vacc.	Number susceptible
Dinajpur	1565	18	235	2424	17.9	434	2729		
Rangpur	3373	15	506	5116	19.2	982	5759		
Bogra	1441	20	288	2096	14.2	298	2359		
Pabna	1793	8	143	2648	14.2	376	2980		
Rajshahi	2572	14	360	4021	13.9	559	4528		
Kushtia	1067	17	181	1774	16.4	291	1997		
Jessore	2004	20	401	3124	16.4	512	3516		
Khulna	2241	30	672	3348	17.2	576	3768		
Faridpur	2909	10	291	3815	26.4	1007	4293		
Barisal				3682	19.5	718	4144		
Patuakhali	3900	15	585	1404	19.5	274	1580		
Mymensingh				7128	22.2	1582	7789		
Tangail	6423	15	963	1953	22.2	433	2198		
Dacca	4663	15	699	7170	20.9	1499	8070		
Sylhet	3193	17	543	4442	21.3	946	5000		
Comilla	4016	15	602	5476	19.2	1051	6163		
Noakhali	2181	19	414	3046	20.3	618	3428		
Chittagong	2730	23	628	4076	20.9	852	4587		
Chittagong HT	352	17	60	479	20 est	95	539		
Total	46424	17	7571	67222	19.5	13103	75427		

Susceptibles per square mile :

136

236

Note : 1. Estimated from 1961 census 2. CDC Assessment 3 & 5. Estimated from 1974 census 4. UNROD Assessment

5.3 SMALLPOX VACCINE PRODUCTION AND DISTRIBUTION IN VIALS  
INSTITUTE OF PUBLIC HEALTH - DACCA

Year	Produced	Distributed	Balance end of year	Vaccine Donation*
1972	343,380	403,310	63,109	35,000
1973	807,000	654,355	224,754	240,000
1974	963,950	972,975	161,197	560,000
1975	730,152	753,716	136,136	1,320,000

\* Vaccines donated through WHO by USSR, USA, Canada ,  
India, Thailand and Guinea



LEVEL

Field

Family Welfare Worker (FWW)  
1/5000 population

Thana

Thana Smallpox Officer (TSO)  
1/200,000 population

Subdivision

Area Smallpox Officer (ASO)  
1/2 million population

National

Assistant Director of Health  
Services (ADHS), Smallpox  
Eradication Programme

International

WHO Smallpox Eradication  
Programme

SOURCE(S) INFORMATION

HOW DISPATCHED

FEEDBACK

Public Information  
House to House Search  
Domiciliary visit

Messenger and/or  
Form-11 to TSO

Research  
meeting

EWV reports  
Surveillance Teams  
Public Information  
Cross-Notification

Information  
Investigation Weekly  
Register mailed to  
ASO and ADHS

Thana Reports  
Surveillance Teams

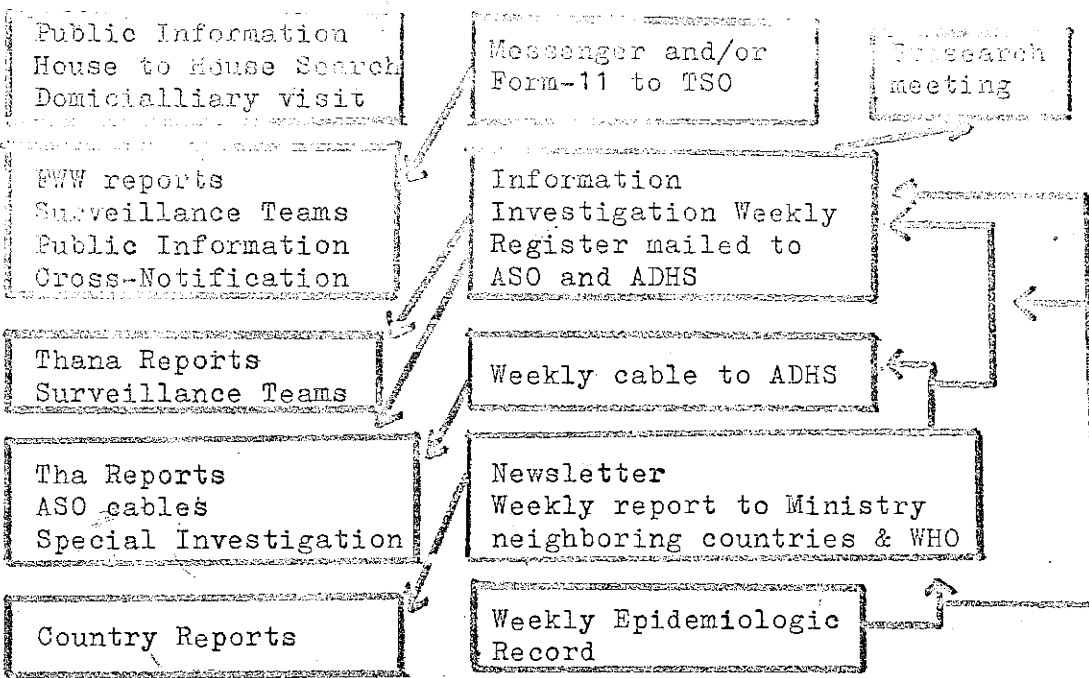
Weekly cable to ADHS

Tha Reports  
ASO cables  
Special Investigation

Newsletter  
Weekly report to Ministry  
neighboring countries & WHO

Country Reports

Weekly Epidemiologic  
Record





Traditionally health workers in Bangladesh were punished for reporting smallpox. As government policy was that of mass vaccination, a report of smallpox was a clear admission that vaccination work was incomplete. Similarly the public had limited incentive to report smallpox. Among many Hindus smallpox is divinely caused by the Goddess Sitola and is independent of any vaccination activity. Among the Muslims smallpox is accepted by many as the will of Allah.

Resistance to reporting also occurred in municipalities where reporting often led to isolation in ID hospitals which according to local belief were places to die; not places to live.

In Bangladesh the 50 Taka (6 US dollars) reward for reporting a new outbreak of smallpox was first introduced a significant change in government policy, as for the first time reward and recognition were given for reporting smallpox. In the spring of 1975 it became apparent that health workers did not spread the information of the reward to the public in the fear that the public and not the worker would receive the reward. It was also noted that health workers often reported outbreaks as their own which had been informed to them by the public. In order to correct these two deficiencies a dual reward system was introduced in May 1975. Under this system both the first public to inform and the first health worker to report were eligible for the reward. In cases of dispute the reward was split, awarded by lottery, or referred to local leaders for arbitration. On several occasions as seen in the enclosed local press cartoon, the smallpox patient reported himself so as to receive the reward. A major effort was undertaken to inform health workers that it was to their own economic advantage to inform the public. To tangibly reward good epidemiology, outbreaks detected through source and contact tracing were also rewarded. During 1975 takas 225,950 were paid in reward money. The Multimedia approach to reward publicity included :

1. House to House visit by FWWs (FWWs knew assessors would check on reward knowledge and had as a prime task reward publicity).
2. Chalking 500 Taka reward on every door in the country.
3. Posting of two reward poster in each of 60,000 villages
4. Distribution of school teaching exercise on smallpox and smallpox reward to each school in Bangladesh through BRAC monthly magazine.
5. Signboards, posters, handbills especially in urban areas.
6. Megaphones at markets, rail station, and ghats.
7. Rickshaw megaphones teams in urban areas and markets
8. Radio
9. Newspaper

10. Television

11. Payment of reward in public. Public payment of the reward especially when done by senior official was excellent publicity.

As the number of outbreaks decreased the reward was increased to 250 on 08 August 1975 and 500 on 11 November 1975. Although it is difficult to assess the effect of the increase on reporting the increase did serve as an excellent assessment tool. Thus asking a villager as to the amount the reward could estimate the villagers last program exposure to reward publicity.

Although at the time the reward was instituted there was concern that smallpox might be spread to collect the reward. Documentation despite source investigation of nearly 4000 outbreaks was not possible. If present its frequency was very low :

At the time Zero was first reached in November 1975, suggestions were made to increase the reward to 1000 or even 5000. Discussions with field staff indicated that further increase in the reward would signal to field staff the end of smallpox and would result in decreased surveillance. The program was also faced with the problem of how to maintain interest and enthusiasm in surveillance at a time of zero cases. Therefore a policy was established to pay the reward for reporting any outbreak which in the view of the epidemiologist was suspect enough to merit full containment. In such outbreaks the full reward was paid.

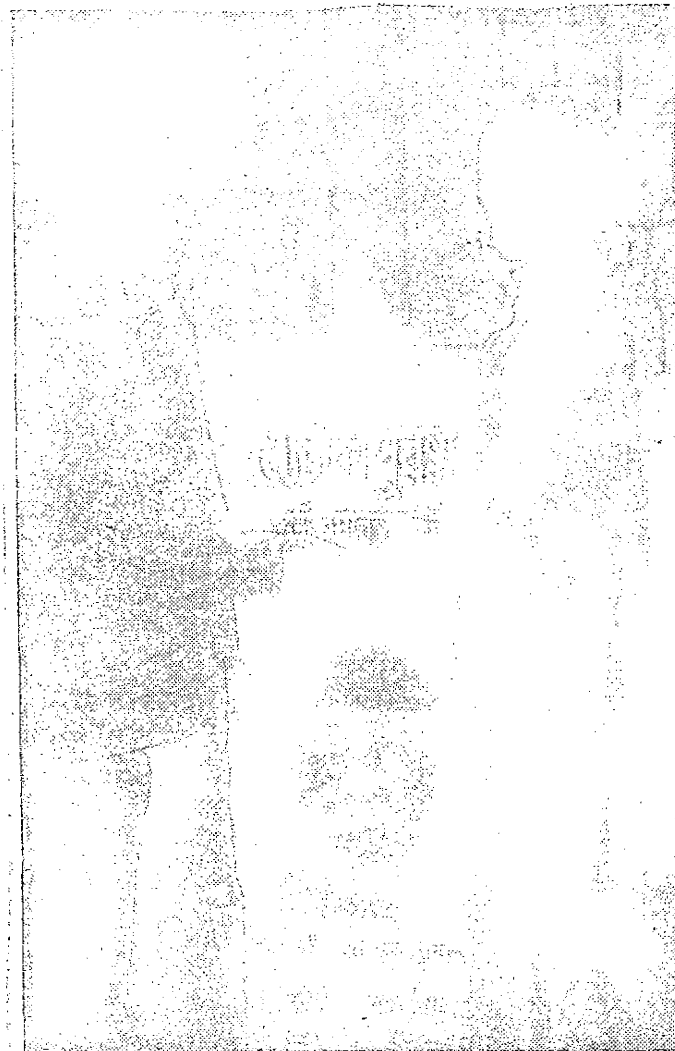
As can be seen in the assessment of reward knowledge the program was effective in publicizing the reward to 85% of the houses. Knowledge of the reward however does not necessarily mean that a householder will report smallpox. In areas where adults have suppressed smallpox, children have often come forward with the information.

The significance of the reward in smallpox eradication program can be summarized as follows :

1. Converted government actual and perceived response to reported smallpox from negative to positive
2. Increased public participation in the eradication program
3. Increased speed of smallpox reporting
4. Provided public recognition of good work by health workers



The Sub-divisional Medical Officer, Sunamganj, awarding Taka 250 to Mariam Nesa, who reported a smallpox case.



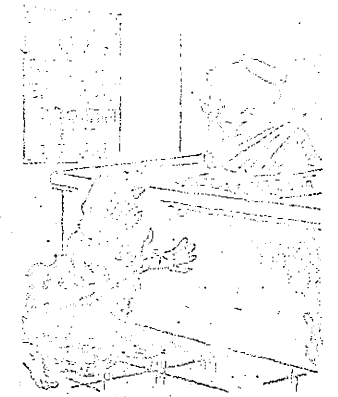
Lt. Col. Hossain Uddin Ahmed, Administrator of Dacca Paurasava is presenting Taka 250/- reward from WHO to Md. Shahjahan, labour sardar of Sadarghat for discovering a case of smallpox.

## Tk 250 award for smallpox incident news

By A Staff Reporter  
Md Shahjahan, labour sardar of Sadarghat terminal was awarded Taka 250 by the World Health Organisation on Tuesday for being the first person to report to the authorities about smallpox incident, at a simple ceremony at the auditorium of the Dacca Municipality. Lt-Col. Hisham-uddin Ahmed, Administrator, Dacca Municipality, awarded the cash prize on behalf of the WHO, according to a Press release of the Dacca Municipality.

Among others, representative of WHO were present at the ceremony, the Press release said.

People throughout the country have been requested by the WHO to report to the authorities about the incidents of smallpox to get the country rid of the curse of it. People may inform about the case of smallpox by telephone numbers 259121, 253416, 302851, 302903.



"কেন জানার প্রবাসটা ছিল নগর  
কিন্তু জানা বাক্য—কই কি ছিল..."

DAINIK BANGLA

12/10/75

Should someone also  
give the information  
and take the case.  
So I myself

## 6.2 KNOWLEDGE OF SMALLPOX REWARD - RESULTS OF RANDOM ASSESSMENT

Date	Number villages visited	Number houses assessed	% know correct amount of reward
September 1975	2413	44604	65
October 1975	1749	34362	79
December 1975	1688	32867	81
January 1976	1608	32111	87
March 1976	1455	28737	87
May 1976			
November 1976			

## 6.3 WEEKLY REPORT OF RASH CASES AND RASH DEATHS (418 REPORTING SITES)

6.3

\* HOUSE TO HOUSE SEARCH MONTH

Month	Reports expected	Reports received	Percent received	Smallpox	Chicken-pox	Measles	Other	Rash deaths
October 1975*	2070	160	7.7	0	611	250	662	0
November 1975	1672	511	30.6	0	937	294	359	0
December 1975*	2070	1184	57.2	0	7009	2486	3145	0
January 1976*	1672	1271	76.0	0	20024	9241	3570	73
February 1976	1672	1368	81.1	0	10282	2167	583	37
March 1976*	2070	1552	75.0	0	40115	11190	1381	41
April 1976	1672	1454	87.0	0	7122	1596	904	14
May 1976								
June 1976*								
July 1976								
August 1976								
September 1976								
October 1976								
November 1976								
December 1976								
January 1977								
February 1977								
March 1977								
April 1977								
May 1977								
June 1977								
July 1977								
August 1977								
September 1977								
October 1977								

## 6.4 HOUSE TO HOUSE SEARCH BANGLADESH

Number	Year	Dates	Days	Search order	Thana presearch meeting	Random assessment
1	1973	December 24 - 28	5			
2	1974	February 4 - 9	5			
3	1974	October 26 - 30	5			
4	1974	December 20 - 24	5			
5	1975	April 21 - 23	3			
6	1975	May 29 - June 6	8	X		
7	1975	July 2- 8	7	X		
8	1975	August 7 - 12	6	X	X	
9	1975	September 11 - 16	6	X	X	X
10	1975	October 24 - 29	6	X	X	X
11	1975	November 27 - Dec. 2	6	X	X	X
12	1976	January 5 - 10	6	X	X	X
13	1976	March 18 - 27	10	X	X	X
14	1976	May 28 - June 5	9	X	X	X

[illegible]

HOUSE-TO-HOUSE SEARCH MAY 28 - JUNE 3

District	SP outbreak	THANA ASSESSMENT		DISTRICT ASSESSMENT (NON-RACCOM)	
		Villages	%	Villages	%
Dinajpur	2	1016	97	37	54
Rangpur	4	1419	90	307	84
Bogra	5	794	98		
Patna		NA			
Rajshahi	4	817	100	5	100
Kushtia	1	635	99	183	100
Jessore	3	1074	100	154	100
Khulna	0	216	100	47	100
Faridpur	13	1310	76	221	91
Barisal	3	987	100	113	100
Patuakhali	1	691	100		
Mymensingh	6	3203	82	215	97
Tangail	1	707	100		
Dacca	17	2487	73	66	82
Sylhet	27	1729	70	16	100
Comilla	9	1915	99	42	100
Noakhali	3	1078	99		
Chittagong	0	NA		135	73
Chittagong HP					
Total	101			1541	93



## 6.5 HOUSE TO HOUSE SEARCH - JULY 2 - 8, 1975

6.5

District	FWW		DISTRICT ASSESSMENT NON RANDOM		
	Information	SP	Villages assessed	Villages searched	% know reward
Dinajpur	13	1	179	94	65
Rangpur	86	0	490	95	85
Bogra	6	3	174	98	94
Pabna	10	0	4	100	53
Rajshahi	192	2	210	78	52
Kushtia	5	0	134	95	83
Jessore	7	0	193	84	59
Khulna	5	0	63	87	60
Faridpur	54	3	271	92	72
Barisal	20	5	59	100	25
Patuakhali	-	0	66	79	63
Mymensingh	529	2	433	75	49
Tangail	17	0	120	100	63
Dacca	118	2	516	92	83
Sylhet	147	6	340	76	49
Comilla	61	6	350	96	63
Noakhali	1	1	44	98	89
Chittagong	9	2	137	96	93
Chittagong HT					
Total	1305	33	3783	89	68

District	FVW		DISTRICT ASSESSMENT (NON-RANDOM)		
	Information	SP	Villages	% searched	% know 50 taka reward
Dinajpur	22	0	229	93	67
Rangpur	41	0	342	95	85
Bogra	0	0	191	100	94
Pabna	3	1	2	100	100
Rajshahi	20	0	166	96	85
Kushtia	23	0	155	96	86
Jessore	16	0	244	89	86
Khulna	73	0	201	73	78
Faridpur	15	3	42	86	82
Barisal	13	0	39	39	
Patuakhali					
Mymensingh	34	0	207	90	68
Tangail					
Dacca	117	0	396	99	88
Sylhet	453	1	194	96	94
Comilla	425	0	443	83	70
Noakhali	39	2	100	100	100
Chittagong	12	0	131	99	95
Chittagong HT					
Total					

District	FWW				DISTRICT ASSESSMENT RANDOM			
	Information	SP	CP	CP per 100000	Villages	Houses	% know Tk.250 reward	% know where to report
Dinajpur	148	0	29	1.1	70	1323	52	53
Rangpur	170	0	72	1.3	154	3047	78	84
Bogra	43	0	28	1.4	70	1416	89	53
Pabna	42	3	41	1.3	84	935	65	88
Rajshahi	143	0	71	1.7	126	2415	61	60
Kushtia	165	0	130	6.9	101	1970	72	73
Jessore	226	0	128	3.9	258	3557	79	60
Khulna	219	0	120	3.4	92	1732	70	65
Faridpur	313	0	87	2.1	120	2391	76	68
Barisal	22	2	14	0.4	91	1774	72	68
Patuakhali	11	0	10	0.7	42	726	36	28
Mymensingh	427	0	237	3.1	234	4378	61	63
Tangail	307	0	102	4.9	62	1235	73	73
Dacca	295	3	151	2.0	226	4259	71	69
Sylhet	1274	0	194	4.1	201	3412	36	26
Comilla	1046	0	244	4.2	161	3799	63	59
Noakhali	60	0	20	0.6	133	2700	68	60
Chittagong	64	0	21	0.5	188	3535	54	60
Chittagong HT								
Total	4975	8	1699	2.4	2413	44604	65	62

## 6.5 HOUSE TO HOUSE SEARCH - C

District	Information	FVV	
		SP	CP
Dinajpur	379	0	114
Rangpur	2440	0	245
Bogra	125	0	38
Pabna	120	0	74
Rajshahi	289	0	70
Kushtia	141	0	42
Jessore	300	0	136
Khulna	571	0	206
Faridpur	210	0	101
Barisal	1053	0	127
Patuakhali	834	0	70
Mymensingh	730	0	248
Tangail	160	0	54
Dacca	474	0	180
Sylhet	1349	0	178
Comilla	815	0	261
Noakhali	1013	0	181
Chittagong	106	0	42
Chittagong HT			
Total	11109	0	2376

DISTRICT ASSESSMENT RANDOM					
CP per 100000	Villages	Houses	Percent visited	% know Tk.250 reward	% know where to report
4	82	1619	80	79	70
4	112	2286	85	81	80
2	49	973	90	88	88
3	59	1078	65	71	64
2	99	1892	88	79	72
2	89	1780	94	91	89
4	107	2140	85	83	69
6	62	1199	72	72	53
2	84	1631	92	85	74
3	81	1580	65	66	55
5	33	778	48	56	40
3	197	3750	70	77	73
3	62	1220	84	84	81
3	226	4289	74	84	76
4	102	1939	68	66	58
4	142	3043	87	82	77
5	67	1325	70	82	72
1	96	1840	80	82	75
3	1749	34362	78	79	72

District	Infor.	HIV REPORT			DISTRICT		
		P	OP	OP per 100,000	Village	House	% visits
Dinajpur	333	0	187	7	58	1100	84
Rangpur	2491	0	506	9	97	1900	91
Pogra	795	0	175	8	51	1020	87
Pabna	977	0	174	6	66	1146	84
Rajshahi	694	0	197	5	96	1788	85
Kushtia	345	0	124	7	42	840	80
Jessore	452	0	260	8	96	1900	83
Khulna	561	0	217	6	68	1339	80
Faridpur	666	0	292	7	85	1695	80
Barisal	1603	0	216	5	42	840	80
Patuakhali	497	0	119	8	28	560	82
Mymensingh	1270	0	557	7	191	3619	84
Tangail	499	0	151	7	49	1070	73
Dacca	1800	0	397	5	260	5066	83
Sylhet	1530	0	296	6	76	1452	65
Comilla	1467	0	492	8	122	2429	90
Noakhali	354	0	230	7	68	1347	66
Chittagong	168	0	98	2	102	1889	92
Chittagong HU							
Total	16502	0	4688	7	1688	32867	84

JANUARY 1977 - DEC 2

## ASSESSMENT (RANDOM)

% know of 500 TR. reward	% know where to report
76	72
87	83
84	79
77	76
83	80
76	73
82	75
80	65
76	65
76	73
84	75
81	78
71	71
82	77
62	56
84	79
89	85
85	82
81	80

District	Infor- mation	Rash death	Diff. diag.	CP	CP per 100,000	Invest- gation
Dinajpur	1122	7	0	794	31	1122
Rangpur	4383	71	40	2058	37	4287
Bogra	1887	13	1	1115	48	1908
Pabna	2000	25	15	1001	35	1712
Rajshahi	3090	49	45	1514	35	1853
Kushtia	1603	3	1	882	46	1603
Jessore	1883	6	12	1523	46	1815
Khulna	1083	1	6	756	21	922
Faridpur	2185	15	22	1444	40	1796
Barisal	1308	9	24	900	22	1284
Patuakhali	938	32	1	451	30	919
Mymensingh	3850	55	4	1990	26	1712
Tangail	1511	32	6	736	35	1425
Dacca	3918	33	23	1522	20	1796
Sylhet	2140	77	21	657	14	1230
Comilla	3259	16	6	1631	27	3103
Noakhali	732	0	3	765	23	721
Chittagong	1094	34	14	534	13	718
Chittagong HT						
Total	37986	478	244	20373	29	31372



SUPERVISORS				DISTRICT ASSESSMENT (RANDOM)				
Deaths	Diff. diag.	No cont. start	% investi-gated	Village	Houses	% visited	% know 500 Tk. reward	% know where to report
7	0	7	100	49	940	88	88	76
66	1	21	98	94	1873	92	90	78
11	0	8	100	45	885	87	87	76
14	1	2	86	66	1294	86	89	82
22	7	3	60	91	1783	75	77	67
3	0	0	100	44	876	91	88	86
6	1	0	96	76	1520	87	86	71
1	0	0	85	60	1193	77	82	72
8	2	2	82	80	1600	88	84	72
6	10	1	98	90	1809	89	95	78
30	1	20	98	127	2558	83	89	80
14	1	2	44	155	3120	84	88	80
14	0	0	94	40	783	89	88	86
8	2	2	46	243	4836	83	84	72
17	3	1	57	95	1852	85	87	84
16	4	4	95	115	2294	89	87	83
0	0	0	98	68	1280	80	80	80
1	0	0	66	77	1615	94	93	87
288	58	73	82	1608	32111	85	87	79

District	Village information	Cash Deaths	Diff. Diagnosis	Chicken-Pox	Chickenpox per 100,000
Moulvibazar	588	6	9	1385	53.2
Barisal	1204	11	17	4442	80.7
Chittagong	844	72	16	1933	66.6
Dhaka	963	23	5	3010	130.8
Faizlahi	909	52	13	4399	102.3
Moulvibazar	619	25	35	2414	127.3
Comilla	1170	16	2	4050	76.4
Moulvibazar	618	8	1	2078	64.9
Moulvibazar	648	79	19	3253	79.3
Barisal	554	4	27	1219	30.4
Pabna	335	12	22	825	55.0
Mymensingh	2118	154	8	4238	55.7
Tangail	700	71	3	1472	70.0
Dacca	1371	101	33	3310	51.7
Moulvibazar	732	13	7	1102	5.5
Comilla	977	7	3	2037	34.5
Noakhali	301	0	0	1772	53.6
Chittagong	392	24	60	1108	27.7
Chittagong HT					
TOTAL	15043	808	280	44052	61.4

LOCAL SUPERVISOR					DISTRICT SUPERVISOR (RANDOM)				
Village investigated	Deaths	Diff. diagnosis	Containment start	Villages	Houses	% visited	% know 500 taka reward	% know where to report	
666	7	1	1	53	1054	80	89	77	
1743	131	0	63	114	2288	86	85	78	
807	72	0	0	58	1131	86	90	74	
962	23	5	19	49	980	93	92	86	
1209	51	2	0	93	1849	82	86	80	
619	25	0	25	39	780	86	89	82	
1172	16	2	16	66	1318	86	84	71	
688	8	0	2	70	1398	87	91	84	
1101	72	5	16	85	1616	84	92	84	
586	4	3	5	78	1557	81	94	76	
341	14	1	2	32	608	81	92	76	
2088	158	2	4	174	3431	88	90	81	
200	60	0	0	35	208	76	81	72	
1662	101	8	1	147	2527	79	72	81	
722	13	2	1	98	1891	29	89	81	
1073	3	1	0	109	2190	95	94	84	
542	0	0	0	68	1356	67	76	62	
317	2	4	0	87	1696	83	85	79	
16988	760	36	155	1455	28737	84	87	78	

BANGLADESH SMALLPOX ERADICATION PROGRAMME (LATERAL CROSSNOTIFICATIONS)  
FEBRUARY - DECEMBER 1975

Month	TYPE OF CROSSNOTIFICATIONS					RESULTS OF INVESTIGATION											
	a	b	c	d	e	SP new out break	SP known out break	CPox	Death no diag.	Not found	other diag.	No report	Total number	Number reports completed	% completed	Number SPox	% SPox
FEB'75	91																
MAR'75	113	20	13														
APR'75	59	8	5														
MAY'75	74	9	18		3	7	14	1	1	10	57	14	104	90	86.5	21	23.3
JUN'75	37	3	15		69	5	15	15	0	12	73	9	129	120	93.0	20	16.6
JUL'75	33	9	19		73	5	11	16	0	11	86	5	134	129	96.3	16	12.4
AUG'75	10	3	22		198	2	10	32	1	28	132	28	233	205	88.0	12	5.8
SEP'75	4	0	35		255	0	1	37	1	50	133	72	294	222	75.5	1	4.5
OCT'75	1	0	0		102	0	0	1	1	0	91	10	103	93	90.3	0	0
NOV'75	1	0	0		65	0	0	0	0	0	57	9	66	57	86.4	0	0
DEC'75	0	1	3	1	41	0	1	0	0	1	32	12	46	34	73.9	1*	2.2
TOTAL	423	58	130	1	806	19	52	102	4	112	661	159	1109	950	86.5	71	6.3

Code :

- a -- Source of infection
- b -- Travel Smallpox Case
- c -- Travel Smallpox Contact
- d -- Relative of Smallpox
- e -- Rumour/Information

\* 1 Healed Case - Chandraprasad Bhola - Char Falcon Noakhali

## 6.9.2 CROSS NOTIFICATIONS RECEIVED FROM INDIA MARCH - OCTOBER 1975

Month	Cross Notification				Smallpox new outbreak	Smallpox old outbreak	CPX	Death no diag	Not found	Other diag.	No. report	Total	Number complete	Percent complete	Percent smallpox
	a	b	c	d											
March	1	0	0	2	1	0	1	0	0	1	1	3	3	100	33
April	19	0	0	3	2	1	0	0	1	16	2	22	20	91	15
May	26	0	1	10	0	4	2	0	2	14	15	37	22	59	11
June	2	0	0	8	0	2	1	0	0	7	0	10	10	100	20
July	1	0	0	2	0	2	1	0	2	14	4	23	19	83	9
August	0	0	0	15	0	0	0	0	0	11	4	15	11	73	0
September	0	0	0	4	0	0	1	0	0	2	1	4	3	75	0
October	0	0	0	2	0	0	0	0	0	2	0	2	2	100	0
TOTAL	49	0	1	66	3	9	6	0	5	67	26	116	90	78	10

- a = Source of Infection  
 b = Travel Smallpox Patient  
 c = Travel Contact  
 d = Rumour

## 6.9.3 SMALLPOX EXPORT

REGION INFECTED IN INDIA				TOTAL	
State	District	Block/RHC	Village	C	D
W. Bengal	Jalpaiguri	Falkata	Kalipur	3	-
Assam	Darrang	Charali	Solmari Mirason	44	3
Assam	Darrang	Orang	Udalguri Jungles	3	1
Assam	Darrang	Orang	Darang Bazar	2	1
Assam	Goalpara	Gouripur	Kholmara	3	-
W. Bengal	Cooch Behar	Sital- kuchi	Morebhang	3	-
Assam	Darrang	Kharupetia	Simulguri	12	1
Assam	Darrang	Bihaguri	Tengabasta	2	-
Assam	Goalpara	Manakchar	Kubergaon	1	-
W. Bengal	Cooch Behar	Dinhata	Jaigir Balabar	2	2
W. Bengal	Nadia	Chakda	Joykrish- napur	2	-
W. Bengal	24 Pargana	Titagarh	N. Mohanpur	3	1
W. Bengal	24 Pargana	Dum Dum	Khalish- kota	1	-
W. Bengal	West Dinajpur	Goalpukur	Nandajhar	1	-
Assam	Kamrup	Tulshibari	Rangia	5	2

## ATTACKS TO INDIA FROM BANGLADESH IN 1975

DATE OF			SOURCE OF INFECTION			Confirmed smallpox Yes/No
First attack	Last attack	Detection	District	Thana	Village	
20/12/74	10/1/75	16/1/75	Mymensingh			
29/12/74	14/2/75	28/1/75	Mymensingh	Malitabari	Pub Bakakura	
1/1/75	16/1/75	8/1/75	Mymensingh	Haluaghat		
1/1/75	16/1/75	4/1/75	Mymensingh	Jamalpur	Nawabpur	
4/1/75	23/1/75	11/1/75	Rangpur	Nageswari	Kutirchar	
21/1/75	7/2/75	3/2/75				
15/2/75	1/4/75	18/3/75	Mymensingh		Mamarchar	
27/2/75	16/3/75	18/3/75	Mymensingh	Phulpur	Pauri	
1/3/75	1/3/75	14/3/75	Rangpur	Rowmari	Kurikandi	No
10/3/75	20/3/75	18/3/75	Rangpur	Nageswari	P. Ramkhana	Yes
16/3/75	17/3/75	25/3/75	Kushtia	Poradaha	Rly. Stn.	Yes
17/3/75	1/4/75	23/3/75	Kushtia	Poradaha	Rly. Stn.	Yes
17/3/75	17/3/75	26/3/75	Kushtia	Poradaha	Rly. Stn.	Yes
17/3/75	17/3/75	2/4/75	Kushtia	Kloksha	Basua	No
18/3/75	12/4/75	18/4/75	Dacca	Shibpur	Kundalpara	No

## 6.2.3 SMALLPOX EXORATIONS TO INDIA

REGION INFECTED IN INDIA				TOTAL		First attack
State	District	Block/EPD	Village	C	D	
W. Bengal	Nadia	Nakasipara	Kangalberia	2	-	19/3/75
W. Bengal	Malda	Agra	Habibpur	1	-	21/3/75
W. Bengal	W. Dinajpur	Balurghat	Teor	2	-	29/3/75
W. Bengal	Malda	English Bazar	Gondrail	4	-	4/4/75
W. Bengal	Cooch Behar	Dinhata	Khataberkuti	1	-	5/4/75
W. Bengal	Cooch Behar	Kotwali	Gayabarichi	1	-	6/4/75
W. Bengal	W. Dinajpur	Balurghat	Vivekanada Palli W-3	2	-	8/4/75
Tripura	West	Bishalgarh	Pramongar	3	-	14/4/75
Tripura	West	Bishalgarh	Barjola	1	-	14/4/75
W. Bengal	Malda	Habibpur	Parbatidanga	18	-	23/4/75
W. Bengal	Cooch Behar	Dinhata	Baroatibari	4	1	27/4/75
Tripura	West	Bishalgarh	Rangapania	4	1	30/4/75
W. Bengal	Nadia	Ranaghat	Gorakya-ghacha	1	-	1/5/75
W. Bengal	Nadia	Kotwali	Dharmada	1	-	2/5/75
Assam	Cachhar	Karimganj	Municipality	1	-	24/5/75

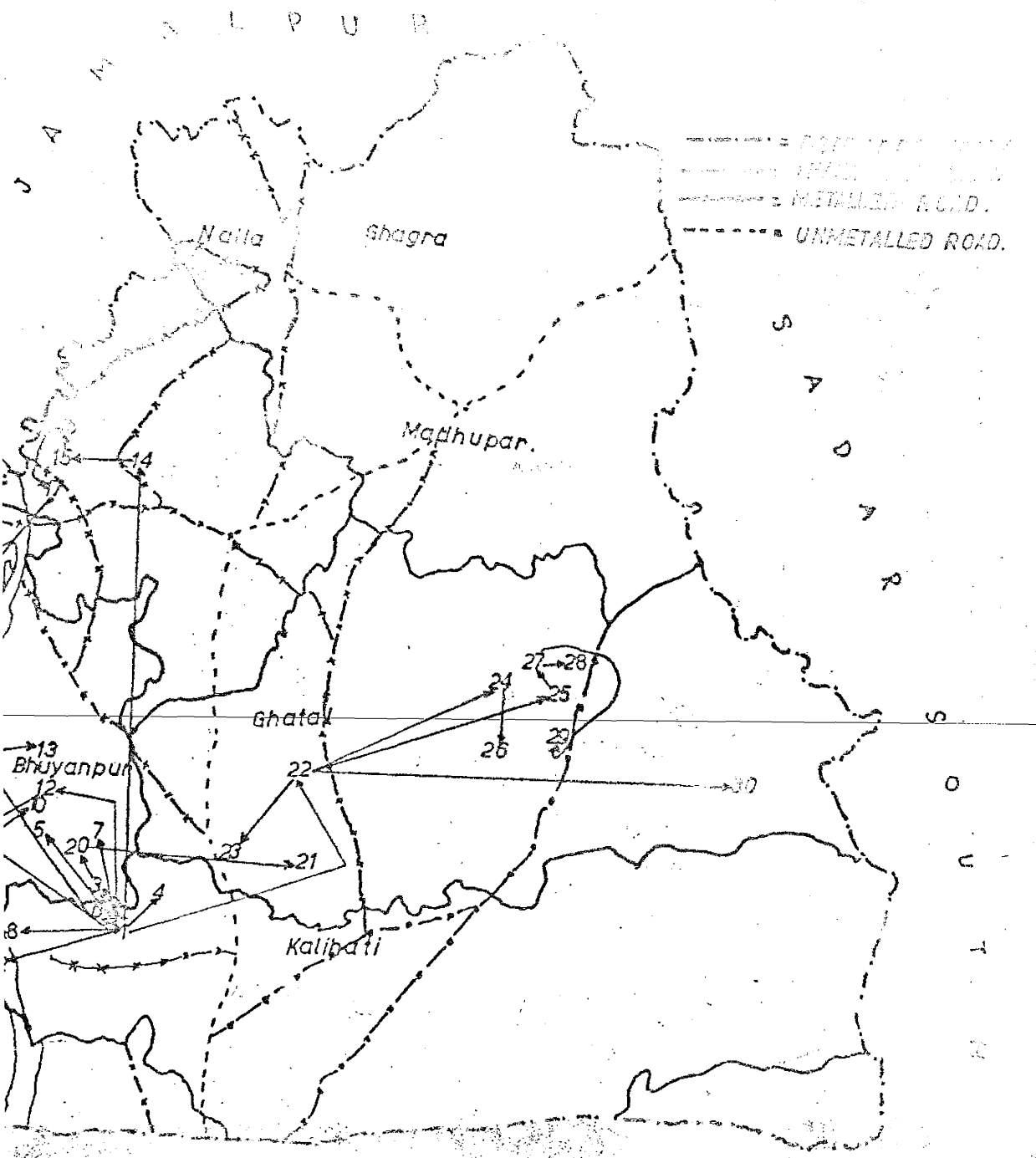


DATE OF		SOURCE OF INFECTION			Confirmed Smallpox Yes/No
Attack	Detection	District	Thana	Village	
19/3/75	26/3/75	Moulkhali	Ramganj	Naogaon	No
21/3/75	25/3/75	Faridpur	Kotali- para	Atashibari	No
12/4/75	20/4/75	Dinajpur	Ghoraghat	Biddigrati	No
25/4/75	20/4/75	Faridpur	Goalondo	Rly. Stn.	No
5/4/75	9/4/75	Rangpur	Fulbari	Anantapur	Yes
6/4/75	9/4/75	Rangpur	Fulbari	Anantapur	Yes
	15/4/75	Dinajpur	Nawabganj	Jaidebpur	No
7/5/75	9/5/75	Comilla	Brahman- baria	Bhawanipur	Yes
14/4/75	28/4/75	Comilla	Muradnagar	Andikati	Yes
5/5/75	24/4/75	Faridpur	Gopalganj	Jaria Nizamkandi	No
	4/5/75	Rangpur	Kaliganj	Masar Bailsar	No
19/5/75	20/5/75	Comilla	Kasba	Ashabari	No
1/5/75	7/5/75	Dacca	Kerani- ganj	Khagorbag	Yes
2/5/75	5/5/75	Faridpur	Baliakandi	Jadavpur	No
24/5/75	26/5/75	Sylhet	Baralekha	Itauri	Yes

Village	C	D	Date first attack	Date last Attack
1. Gohaliabari	55	12	25/2	7/4
2. Madinhamjani	1	0	26/3	-
3. Nikrail	2	1	25/3	14/4
4. Malati	4	1	27/4	11/5
5. Rahuti	1	0	13/4	-
6. Amula	7	1	1/5	8/6
7. Niklagopal	8	3	22/3	24/4
8. Saratail	5	0	16/3	12/5
9. Sharpailse	3	0	28/3	15/5
10. Gobindashi	4	0	7/6	16/6
11. Pathailkandi	3	0	14/6	20/6
12. Begbari	3	0	4/4	26/4
13. Bhuapur	1	0	27/3	-
14. Dakhinpathalia	4	9	23/3	26/4
15. Mohail	9	3	6/4	18/4
16. Darisaya	18	6	20/4	18/6
17. Dakri	4	0	2/5	23/6
18. Jagatpur	14	2	11/6	17/7
19. Chithuliapara	3	1	28/3	20/4
20. Bilchapra	1	0	15/4	-
21. Biara	2	0	13/5	14/6
22. Maidhyakarna	34	6	14/3	27/4
23. Dakatia	6	1	25/4	3/6
24. Kushariabari	9	2	7/4	30/4
25. Chakdiabari	4	0	27/4	13/5
26. Ganjana	2	0	15/5	4/6
27. Gilabari	7	1	14/5	26/6
28. Manikpur	2	0	7/6	12/6
29. Shafakot	7	0	24/5	12/6
30. Malirchala	1	0	19/4	-
	224	40		



140 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560 580 600 620 640 660 680 700 720 740 760 780 800 820 840 860 880 900 920 940 960 980 1000



\* Khan et al J. Inf Dis 1975-131 : 34-39

\*\* Monsur et al J. Inf. Dis 1975-131 : 43

	ARA-A	ARA-C	CONTROL-1
Number of Patients	9	9	11
Dose of Drug	20mg/kg	3mg/kg	Placebo
Average Days of rash at admission	4.1	3.8	3.7
Granulocyte Depression	0	++++	0
Isolation of Virus from Blood Day 7	3/6	3/4	0/6
Deaths	5	9	4
Mortality	56%	100%	36%

BACKGROUND : 1. Uncontrolled study reported in Lancet indicated major therapeutic effect of ARA-C.

2. Experimental studies in animal demonstrated therapeutic effect of drugs against pox virus.

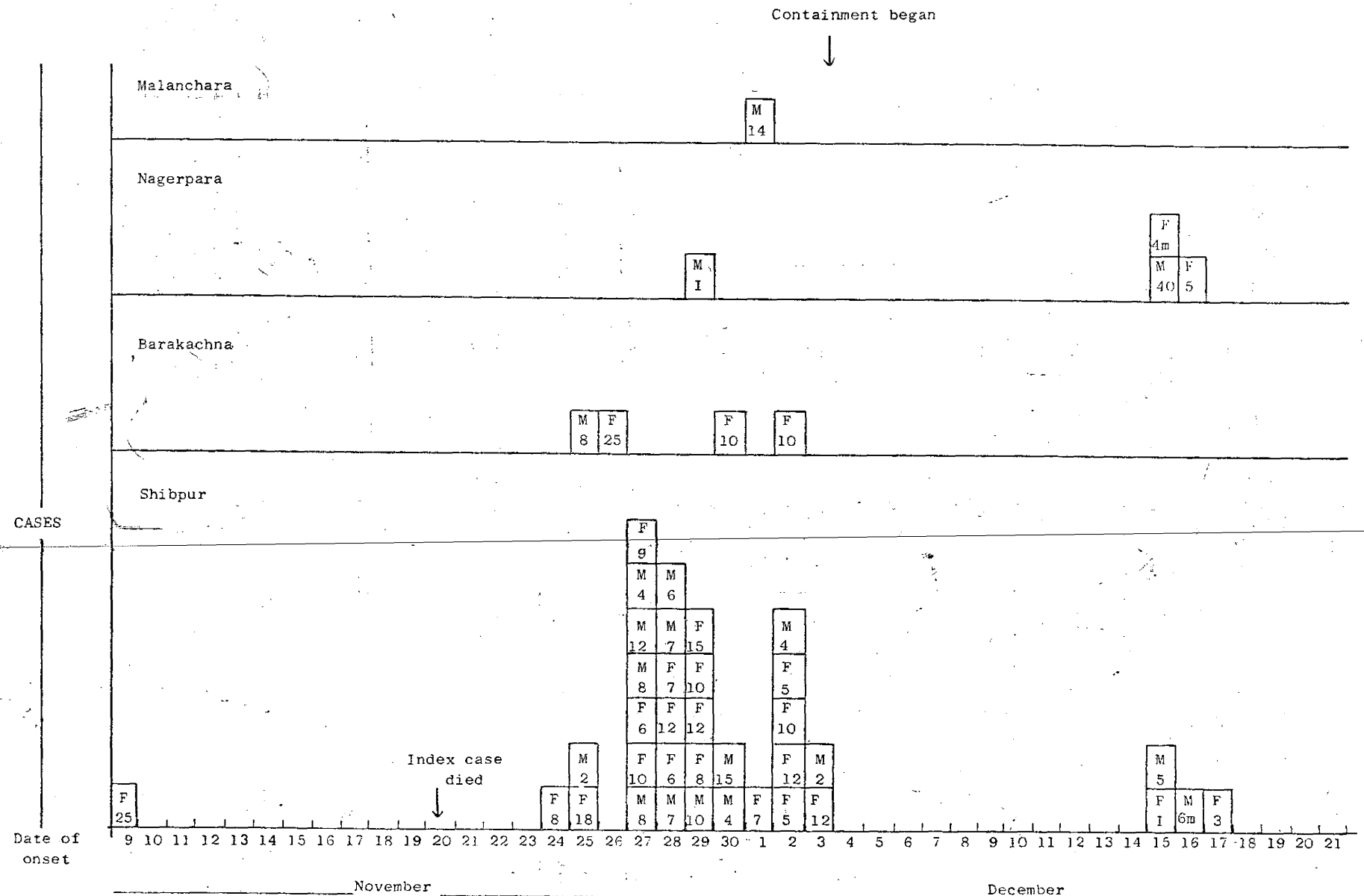
STUDY : 1. Study was carried out in Dacca IDH during a major smallpox epidemic at which time admission was limited to severe cases with mortality about 50%.

RESULTS : 1. Patients treated with ARA-A did not differ significantly from control  
2. Patients treated with ARA-C had 100% mortality related to the disease, immune suppression and toxicity.

6.10 SMALLPOX TRANSMISSION SYLHET BANGLADESH APRIL 1973 - JANUARY 1974  
( An example of monsoon transmission)

Thana	Village	Cases	Deaths	First Attack	Last attack	Source	Note
Kotwali	Mallakandi	41	4	April 1973	July 1975	?	Undetected
Kotwali	Pubhaj	4	0	7/7	21/7	Mallakande	Undetected
Kotwali	Moktichar	7	2	11/8	4/9	Pubhaj	Undetected
Balaganj	Goyespur	5	2	31/8	10/9	Moktichar	Undetected
Balaganj	Pachal	8	1	2/10	26/11	Goyespur	Detected with poor containment
Kotwali	Khanua	3	0	12/11(all imported)			Three patients from Pachal moved to Khanua
Chhatak	Rampur	9	2	26/11	10/1	Khanua	Visitor from Rampur infected
Chhatak	Malipur	1	0	8/1		Rampur	
Kotwali	Khanua	1	0	8/1		Rampur	Infected patient from Rampur returned and infected new resident of Khanua and visitor from Bishwanath
Biswanath	Sharishapur	1	0	11/1		<del>Rampur</del> Khanua	

# POST EID SMALLPOX TRANSMISSION GOSHAIRHAT THANA, FARIDPUR, BANGLADESH. NOVEMBER - DECEMBER = 1973.



F 6 Indicates one case in a female of six years.

SOURCE WHO:SE 74.65 RANGERAJ AND YUSUF.

6.10 SMALLPOX VACCINE FAILURE - SEPTEMBER-NOVEMBER 1974

In early October 1974, at the low point in the smallpox transmission, vaccination failures in 10 contacts of smallpox cases were detected by a WHO Epidemiologist in Raghapur village, Shaghatta Thana, Gaibandha Subdivision Rangpur district.

Examination of the vaccine in use, Connaught lot 1531, showed certain vials to have discoloration and shrinkage. It was also noted that normal appearing vaccine coming from central storage changed when exposed to heat as in a Land Rover. Samples of vaccine were returned for titer and showed low titers  $2 \times 10^5$  -  $5.4 \times 10^6$  (WHO standard  $1 \times 10^8$ ).

Field staff were alerted and similar vaccine failures were detected in Nilphamari, Rangpur, and Jamalpur Mymensingh. The vaccine was recalled from the field on 12 November 1974.

Laboratory studies at Connaught and by a WHO Reference Laboratory showed normal vacuum which ruled out leakage due to defect in stopper or metal seal.

On rechecking vaccine in storage at the manufacturers, the moisture content was found to have increased from 1.55 and 2.75% at time of production in June 1973 to 6.62 and 7.11 in December 1974. As demonstrated experimentally by Sparkes and Fenje Bull WHO 1972, 46, 729-734 titer reduction in stored vaccine was directly related to residual moisture, time, and temperature. Further studies identified a new butyl stopper as the source of the moisture. The stoppers contained significant moisture and slowly released it into the hygroscopic vaccine.

As Connaught vaccine had an excellent reputation it was preferentially used in infected villages. The vaccine failures at the low point of transmission contributed to the failure of eradication in 1974.

## 6.10 SMALLPOX KURIGRAM - RANGPUR SEPTEMBER - NOVEMBER 1974

## FULBARI THANA

Date	Cases by date of attack
September 1 - 15	1
16 - 30	3
October 1 - 15	1
16 - 30	31
November 1 - 15	66
16 - 30	25



6.10 HIGH SMALLPOX TRANSMISSION RAIGANJ BAZAR - NAGESWAR  
DECEMBER 1974

Village	FIRST GENERATION				SECOND GENERATION		
	First attack	Last attack	C	D	First attack	Last attack	C
Raiganj Bazar	23/11/74	2/12/74	1	1	12/12/74	18/12/74	6
Sonairkhamar West					13/12/74	19/12/74	5
Sonairkhamar East					14/12/74	17/12/74	6
Paschim Raiganj					15/12/74	15/12/74	1
Bangalerbosh					13/12/74	18/12/74	5
Damalgram(Ratanpur)					12/12/74	17/12/74	2
Damalgram					13/12/74	17/12/74	2
Ajmata					12/12/74	15/12/74	3
Ashkornagar					14/12/74	14/12/74	1
Shapkhawa					13/12/74	15/12/74	2
Santoshpur-I					14/12/74	16/12/74	3
Santoshpur-II					12/12/74	17/12/74	3
Santoshpur-III							
Kuty Nawdanga					14/12/74	14/12/74	1
Nilurkhamar-I					13/12/74	13/12/74	1
Nilurkhamar-II					15/12/74	16/12/74	2
Paschim Nageswari					13/12/74	13/12/74	1
Paschim Ramkhana					17/12/74	17/12/74	1
Total :			1	1			48

THIRD GENERATION					FOURTH GENERATION			
D	First attack	Last attack	C	D	First attack	Last attack	C	D
2	20/12/74	27/12/74	3	0				
1	29/12/74	4/1/75	2	0				
0	29/12/74	29/12/74	1	0				
0	31/12/74	31/12/74	1	0				
2	24/12/74	24/12/74	1	0				
0	25/12/74	29/12/74	2	0				
1								
0	28/12/74	28/12/74	1	0				
1	2/1/75	2/1/75	1	0				
1	28/12/74	30/12/74	2	2				
1	28/12/74	28/12/74	1	0				
1	28/12/74	30/12/74	4	1				
					30/12/74	30/12/74	1	1
0	30/12/74	30/12/74	1	0				
0								
0	27/12/74	28/12/74	2	0				
1	28/12/74	29/12/74	2	0				
0								
11			24	3			1	1

## 6.10 EXPORTATION SCARE UK, USA, CANADA

Index Case : Abdul Kayum, S/o Irahad Ali, 7 years old male Akupur Village, Balaganj Thana, Sylhet

2/8/75 : Travelled by plane Sylhet to Dacca  
5/8/75  
& : Attended British High Commission to obtain UK Entry Certificate  
6/8/75  
8/8/75 : Returned Sylhet  
9/8/75 : Fever  
11/8/75 : Rash  
27/8/75 : Outbreak detected (Source Dirirai village - Balaganj)  
30/8/75 : High Commission Contacts Listed (61 of whom 12 had left Bangladesh)

UK - 12 : 6 Found UK - well  
1 Found Canada - well  
3 Found USA - well  
2 Not found

November 1975 : Patient travelled to UK

Picked up enroute as suspect smallpox-examined at Calcutta and cleared.

# Search For The Last Case

by A Smallpox Epidemiologist

**TAKA DEAN SM. Family Welfare Worker (FWW) Raipur, Nepal** of the Ministry of Health and Family Planning was following his previously prepared five day programme to search all the bari in his assigned area (sub-sector) for smallpox. At each bari he showed a card with a picture of smallpox, informed the householders of the 250 Taka reward for reporting a new smallpox outbreak, and asked if they had seen any cases or heard any rumours of smallpox in the area. As Raipur thana has been free of smallpox for several months, the worker did not expect to find smallpox but he had a job to do and this he was doing. Suddenly one of his listeners became excited and identified a bari where there was a case! The FWW immediately searched out the house and found Tajorka Khatun, an 18-year-old girl with active smallpox. The worker immediately pulled out his dry vaccine, which had been manufactured at the Institute of Public Health, Mohakhali, diluted it, and started vaccinating the bari and (para) contacts of the infected case.

Word was sent to Rob Chowdhury, the Thana Smallpox Officer (TSO), who set out at 4.00 a.m. the next morning for the seven miles journey on foot to the infected village. On arriving there he recruited temporary workers from the village and trained them in the technique of vaccination. Four of these workers were appointed as House Guards to keep the patient in the house, to vaccinate anyone coming to the bari and to keep all traders, beggars and visitors away. With the House Guards in place the TSO, the FWW, and the Emergency Field Workers (EFW) started to record all the names of the residents and visitors in the half-mile area around the infected house. As close contacts have the highest probability of being infected, priority in enumeration and vaccination was given to the residents of the infected

bari and the surrounding houses.

## SMALLPOX DETECTIVE AT WORK

With the containment action initiated, the TSO set out to find out the source of the smallpox. As smallpox is only passed from person to person, every smallpox outbreak has a source and detection of this source often identifies a previously unknown smallpox infected village. In this outbreak the source was clear, a village on Bhola Island in Barisal district where 6 cases and 2 deaths had reportedly occurred. As no outbreaks had been reported recently from Bhola Island, this was an emergency and an alert was sent to District Headquarters in Maizdee to notify the Area Smallpox Officer, Dr Dias, and the WHO Epidemiologist, Alan Fiske. As smallpox is an emergency day and night, the team set off immediately for Raipur to confirm the diagnosis and source. With the information confirmed and the work proceeding satisfactorily Alan Fiske returned to Maizdee to pass the information to the Smallpox Operation Centre via the smallpox radio network. A smallpox Epidemiologist was standing by in Barisal passing on routine messages so the word was heard immediately it was sent. Within two hours a speed boat was arranged and a team set off for Bhola Island. Investigation of this cross notification has confirmed the presence of smallpox in Remdashpur village of Bhola Island, an Island thought to be free of smallpox. Containment has been completed there.

## STOPPING THE SPREAD OF SMALLPOX

Back in Raipur a specially trained four-man surveillance team had joined the TSO and the FWW. Attention was directed towards identifying all the people who had contact with the smallpox patient from the date of onset or rash to the date that the smallpox case was found. Most contacts were found, vaccinated, and

put under observation, but one has not yet been found. There are rumours that this last contact may be in any of four bars in three different towns and all of these are under surveillance. Special teams are organized to search the surrounding area up to five miles to look for other cases. Other workers set out to hunt the missing person. The surveillance team identifies all the local markets and set up a schedule to visit each market on market day and by beating of drums to alert the public to smallpox in the area and to collect information about other cases of rash disease.

## BANGLADESH SMALLPOX ERADICATION PROGRAMME

The efficiency and team work of this operation is the culmination of the joint effort of Bangladesh and the World Health Organization which together established a Smallpox Eradication Project soon after liberation to control the mass importations of smallpox from four infected refugee camps. Progress was slow initially as administrative structures were re-established and staff recruited and trained. In the fall of 1972 smallpox hit Dacca and created havoc with more than 3 000 cases. During the epidemic of 1973—33,255 cases and 9 354 deaths were recorded. As many cases went unreported the actual numbers were 10-20 times higher. By 1974 the entire staff of the Ministry of Health and Family Planning 12 000 strong had been trained and an emergency plan of action was initiated. By October 1974 smallpox was restricted to two districts, Tangpur and Mymensingh, the two districts hit hardest by the flood and famine of 1974. People in these areas started moving in search of food and employment and took with them smallpox to the cities and then to the rest of the country.

## GLOBAL PROGRESS TOWARD SMALLPOX ERADICATION

Meanwhile the global programme of the 134 member states of the World Health Organization (Continued on Page 5)

Bangladesh was making impressive progress. From the 32 countries infected in 1960, 29 had been declared smallpox free by January 1973. India was nearing smallpox zero after a disastrous epidemic of several hundreds of thousands cases in Bihar. The success of the global programme was jeopardized by the setbacks caused by the natural disasters in Bangladesh. In February of 1975 all resources of the Government were mobilized to lead an all-out attack on smallpox. To a doubtful press corps the Ministry announced major efforts to control smallpox in three months and to eradicate the disease by autumn.

The progress has been dramatic, the number of infected villages has decreased from 1280 to 49 and the number of active cases from 1351 to 35. This effort is a stirring example of national and international cooperation and has only been achieved by the full commitment of the Ministry, the joint field effort of national and international workers—the latter representing 23 countries, and assistance from the Canada, India, Iran UK, USA and the USSR, and especially a large grant from the Government of Sweden.

#### VICTORY NOT YET ACHIEVED

Although progress has been dramatic over the last three months, VICTORY OVER SMALLPOX IS NOT YET ACHIEVED. The effort to drop from 100 to ZERO is in many ways as great as that required to go from 1000 to 100. Every outbreak of smallpox in Bangladesh must be identified, investigated, and contained. It is estimated that there are only fifty undetected outbreaks of smallpox in all of Bangladesh. When these are found and stopped Bangladesh will join the ranks of the countries who have achieved smallpox zero. To do this public cooperation to report every suspect case of smallpox must be enlisted. Increased publicity by press, radio and Government

public to cooperate in reporting immediate cases of suspect smallpox case to the nearest health office.

#### REWARD

To increase public awareness and cooperation a reward of 250 taka will be paid to the first person who reports a previously unknown outbreak of active smallpox. A similar reward will be paid to the first health worker who investigates and initiates action.

September and October are the months of lowest smallpox transmission. It is vital that every effort is made to stop smallpox now and for ever, especially before the mass population movement that takes place during the Eid holidays.

Public cooperation is essential.

#### Be ALERT

**USE YOUR EYES**—Search for smallpox in your village, at your place of work, at the bazar, on trains, boats, buses and ferries.

**REPORT**—If you see a case of rash disease that might be smallpox report immediately to the nearest health office.

When **SMALLPOX ZERO** is reached, the programme will not end but will continue for a minimum of two years. Only by staying alert, seeking information, investigating every rumour, and collecting laboratory specimens on each suspect case of rash disease can victory over smallpox be assured. Single outbreaks, have gone undetected for periods up to nine months, so continued unrelenting vigilance will be required long after the last case.

#### BENEFITS TO THE NATION

The achievement of Smallpox Zero will benefit Bangladesh not only in the elimination of a major cause of suffering, blindness and death but also by releasing resources for attacks on equally important health problems such as malaria, tuberculosis, population and nutrition. The lessons learned in the smallpox eradication programme, in terms of organization, training, supervi-

tion, will be studied to assess their applicability to other health programmes. The commitment of the national staff to the smallpox eradication programme is genuine and complete. Thousands of workers have tramped through mud, water, more mud and more water to check out a rumour of chickenpox, or investigated a case. Two national team members have lost their lives in the noble tradition of the pioneers of science. Dr. Karim Huda, SDMOH, Chittagong, lost his life in a launch accident, en route to investigate a case of smallpox on Sandwip Island. Recently Mr. A. I. M. Abul Hossain, SDHO, Narayanganj died while attending a search meeting in Barhatta. The cost of the smallpox programme is high in terms of people, transport and fund but the achievement of eradication, the detection of the last case of Varicella Major in Bangladesh and the world will be an everlasting tribute to the young nation and to its loyal troops in the field.



## 7.2 LABORATORY SPECIMENS SUBMITTED BY MONTH BY DISTRICT 1976 - 1977\*

7.2

District	1976												1977												TOTAL
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
Dinajpur	0	0	1	0																					
Rangpur	3	0	3	6																					
Bogra	1	4	3	1																					
Pabna	0	0	1	0																					
Rajshahi	2	3	1	1																					
Kushtia	0	0	0	0																					
Jessore	2	3	6	10																					
Khulna	1	0	1	1																					
Faridpur	0	2	0	2																					
Barisal	1	1	5	4																					
Patuakhali	0	6	0	0																					
Mymensingh	1	11	15	5																					
Tangail	0	2	2	0																					
Dacca	8	26	15	5																					
Sylhet	0	2	8	6																					
Comilla	0	1	0	0																					
Noakhali	0	12	2	1																					
Chittagong	9	19	8	7																					
Chittagong HT	0	1	1	0																					
Total	28	93	72	44																					

\* See Laboratory Specimen Book for Details

### 1.3 COMPARABILITY OF DACCA AND WHO DIAGNOSTIC LABORATORIES

#### AGAR GEL

		DACCA LABORATORY		
		Positive	Negative	Total
W H O	Positive	5	2**	7
	Negative	2*	33	35
	Total	7	35	42

\* 132/90 Smallpox  
 213/182 Chickenpox  
 \*\* NN 121 Smallpox  
 222/189 Smallpox

#### ELECTRON MICROSCOPY - WHO REFERENCE LABORATORY

		WHO LABORATORY			
		Pox	Herpes Varicella	Negative	Total
C D I A G N O S I S A L	Smallpox	11			11
	Vaccinia	1			1
	Chickenpox		19	5	24
	Other		1	9	10
	Total	12	20	14	46

#### EGG ISOLATION

		DACCA LABORATORY		
		Positive	Negative	Total
W H O	Positive	5	3**	8
	Negative	1*	37	38
	Total	6	40	46

\* 132/90 Smallpox  
 \*\* NN 21 Smallpox  
 222/189 Smallpox  
 B34 Vaccinia

#### DIAGNOSIS

		DACCA LABORATORY		
		Smallpox	Negative	Total
W H O	Smallpox	5	2*	7
	Vaccinia		1	1
	Pox nodiagnosis	1**	3***	4
	Herpes Varicella		20	20
	Negative		14	14
Total		6	40	46

\* NN/121 Smallpox  
 222/189 Smallpox  
 \*\* 132/90 Smallpox  
 \*\*\* NN 20 Smallpox  
 NN 61 Smallpox  
 212/181 Smallpox





## 8.1.1 PERSONNEL DURING 3 MONTH PERIOD MAXIMUM CONTAINMENT

	<u>Number</u>	<u>Man days 3 month</u>	<u>Total man day 3 month</u>
Headquarters	80	75	6,000
Epidemiologists	90	80	7,200
ASOs and TSOs	500	30	15,000
Surveillance Team Members	400	75	30,000
Health Staff 2 searches	12000	12	144,000
Containment			
Health Staff	1000	70	70,000
Emergency Field Worker	10000	90	900,000
TOTAL :	24070		1072,200

Man days per month 357,400

## 8.1.2 PERSONNEL DURING 3 MONTH PERIOD AFTER ZERO\*

	<u>Number</u>	<u>Man days 3 month</u>	<u>Total man days 3 month</u>
Headquarters	70	75	5,250
Epidemiologists	30	75	2,250
Civil Surgeon & Area Smallpox Officer	100	12	1,200
Thana Smallpox Officer	400	12	4,800
Surveillance Team Members	240	75	18,000
Health Staff/search	12000	10	120,000
	12810		151,500
Man days/month 50,500			

\* Including one National House to House Search

## 8.1.3 WHO SMALLPOX ERADICATION PROGRAMME STAFF BANGLADESH 1972 - 1977

8.1.3

Month	1972				1974				1976			
	WHO ADMN	INT'L EPID	NAT'L EPID	TOTAL	WHO ADMN	INT'L EPID	NAT'L EPID	TOTAL	WHO ADMN	INT'L EPID	NAT'L EPID	TOTAL
JAN	-	-	-	-	1	6	-	7	7	21	20	48
FEB	-	-	-	-	1	7	-	8	7	20	21	48
MAR	-	5	-	5	1	11	-	12	7	19	21	47
APR	-	4	-	4	1	11	-	12	6	18	22	46
MAY	-	4	-	4	1	10	-	11	5	17	19	41
JUN	-	3	-	3	1	7	-	8	3	10	18	28
JUL	-	2	-	2	1	8	-	9				
AUG	-	2	-	2	1	10	-	11				
SEP	-	2	-	2	2	10	-	12				
OCT	1	1	-	2	2	12	-	14				
NOV	1	1	-	2	2	9	-	11				
DEC	1	1	-	2	2	15	-	17				
1973				1975				1977				
JAN	1	1	-	2	2	19	-	21				
FEB	1	2	-	3	7	31	-	38				
MAR	1	4	-	5	10	53	-	63				
APR	1	4	-	5	10	55	-	65				
MAY	1	4	-	5	11	60	7	78				
JUN	1	4	-	5	10	58	9	77				
JUL	1	4	-	5	10	65	15	90				
AUG	1	5	-	6	9	56	31	96				
SEP	1	5	-	6	9	44	28	81				
OCT	1	7	-	8	8	42	32	82				
NOV	1	6	-	7	8	27	23	58				
DEC	1	6	-	7	8	27	19	54				

8.1.4 NATIONALITIES OF EPIDEMIOLOGISTS - BANGLADESH SMALLPOX  
ERADICATION PROGRAMME 1972 - 1976

8.1.4

Afghanistan	1	Iran	1
Australia	1	Japan	4
Austria	2	Ireland	1
Bangladesh	126	Norway	1
Belize	1	Phillipines	2
Brazil	3	Poland	2
Canada	2	South Korea	1
Czechoslovakia	4	Sweden	4
Egypt	7	Switzerland	2
Ethiopia	1	Thailand	1
Federal Republic of Germany	1	Union of Soviet Socialist Republics	5
Finland	1	United Kingdom	36
France	5	United States of America	102
Holland	2		
India	2		

	Number	Days*	Man Days
District Officers Civil Surgeon and Area Smallpox Officers	100	8	800
Epidemiologists	150	5	750
Surveillance Team Leaders	100	12	1200
Surveillance Team Members	400	4	1600
Thana Smallpox Officers	500	10	5000
Thana Staff Inspector, Assistant Insp. Family Welfare Worker	12000	5	60000
Total	12850		69350

\* Training session lasting at least 2 hours

### 8.3 TRANSPORT DURING MAXIMUM CONTAINMENT

	Smallpox	Borrow	Total
Vehicles	108	19	127
Motorcycles	310	-	310
Boats	30	20	50
Outboard Motor	77	-	77
Launches	-	7	7
Total	525	46	571





## 10.0 BIBLIOGRAPHY (CABINET 2 &amp; 3 OPERATIONS CENTER)

## Bangladesh Newsletter

## Chronology

C1 1961-1971  
C2 1972  
C3 1973  
C4 1974  
C5A 1975 Jan-June  
C5B 1975 Jul-Dec  
C6 1976  
C7 1977

## House to House Search

H1 Orders Results  
H2 Chandpur Thana March 1976

## Publicity

P1 Photographs  
P2 Press  
P3 Publicity

## Laboratory

L1  
L2  
L3

## Outbreaks

O1 Kuralia Bhola Barisal  
O2 Kuralia Bhola Barisal  
O3 Rauzan Chittagong  
O4, Rauzan Chittagong

## Monograph File

## Surveillance Team

S1

## Target Zero

## Cross Notifications

X1  
X2

WER1 1-90

WER2 90+

## 10.0 SMALLPOX BIBLIOGRAPHY SUBJECT CODE

A. ASSESSMENT	N. NEWLETTER
B. SURVEILLANCE	O. ORDER - GOVERNMENT
C. CONTAINMENT	P. PUBLICITY PRESS
D. DOCUMENT	Q. QUARTERLY REPORTS
E. EPIDEMIOLOGY	R. REPORT - TOUR
F. FINANCE	S. SURVEILLANCE
G. GUIDELINES	T. TRAINING
H. HOUSE TO HOUSE SEARCH	U. URBAN MUNICIPALITY
I. INVESTIGATION	V. VACCINE
J. PERSONNEL	W. WHO
K. KEY REVIEW	X. EXPORTATION IMPORTATION
L. LABORATORY	Y. ASSIGNMENT REPORTS
M. MEETING	Z. SPECIAL SEARCH

## 10.0 SMALLPOX ERADICATION PROGRAMME BIBLIOGRAPHY

10.0

File Code : C. Chronological L. Laboratory S. Scar Survey  
 F. File Box Number M. Municipal T. Team Surveillance  
 H. House to House Search R. Reinvestigation X. Cross-Notification

Mankwart-Field Report

Number	File	Year	Month	Subject Code	Subject
1A	C - 1	1958		E	Smallpox outbreak Report
1B	C - 1	1961		D	SEP Scheme
1C	C - 1	1965		D	Annual Report DG 1960 - 1965
1D	C - 1	1966		D	Annual Report DG 1966
2A	C - 1	1967		E	Endemic Smallpox in a Rural Area
2B	C - 1	1967		K	Endemic Smallpox East Pakistan
3A	C - 1	1969		U	Mass Vaccination Dacca City
4A	C - 1	1969		O	Government Smallpox Order
5A	C - 1	1969		D	Plan of Action
6	C - 1	1969		D	" addendum
7	C - 1	1969		V	Production Freeze Dried Vaccine
8	C - 1	1969		G	Method Mass Vaccination
9	C - 1	1969		A	Method of Assessment
10	C - 1	1969		I	Clinical Diagnosis of Smallpox
11	C - 1	1969		C	Containment
12	C - 1	1970		K	HQ Field Visit- Arita
13	C - 1	1970		A	Assessment Report September 1970
14	C - 1	1970	2	G	Guidelines for Field Works

[illegible]

## 10.0 SMALLPOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      L. Laboratory      S. Scar Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	19	C - 2	1972	3	O	Emergency Smallpox Control
	20	C - 2	1972	3	K	SEP Reestablishment
	21	c - 2	1972	3	R	Helicopter Tour Report
	22	C - 2	1972	3	K	Status 11/3/72
	23	C - 2	1972	3	K	Status 22/3/72
	24	C - 2	1972	3	R	Jhenaidah Jessore
	25	C - 2	1972	3	R	Kushtia Jessore Khulna
	26	C - 2	1972	4	R	Faridpur
	27	C - 2	1972	4	K	Khulna Division
	28	C - 2	1972	4	R	Barisal
	29	C - 2	1972	4	R	Chittagong & Chittagong Hill Tracts
	30	C - 2	1972	4	K	Status 10/4/72
	31	C - 2	1972	4	R	Tangail
	32	C - 2	1972	4	R	Comilla
	33	C - 2	1972	4	R	Manikganj Dacca
	34	C - 2	1972	4	O	Surveillance
	35	C - 2	1972	4	D	Surveillance - Containment
	36	C - 2	1972	4	G	Smallpox Control Instructions

## 10.0 SMALLPOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      L. Laboratory      S. Scar Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	37	C - 2	1972	4	R	Mymensingh
	38	C - 2	1972	4	R	Dinajpur Rangpur Bogra
	39	C - 2	1972	5	Y	Foster 3/72 - 5/72
	40	C - 2	1972	5	R	Faridpur
	41	C - 2	1972	5	R	Rajshahi
	42	C - 2	1972	5	R	Jessore and Khulna
	43	C - 2	1972	5	R	Mathbaria Barisal
	44A	C - 2	1972	5	D	Rajshahi
	44B	C - 2	1972	5	R	Unrod Nutrition Vaccination Scar Survey
	45	C - 2	1972	6	D	Draft Plan
	46A	C - 2	1972	6	Y	Sommers 12/3/72 - 5/6/72
	46B	C - 2	1972	6	K	Smallpox Epidemic Chapter in Diseases in Bangladesh
	46C	C - 2	1972	6	EU	Khulna Municipality SP Epidemics
	46D	C - 2	1972	6	EU	" " " Surveillance & Containment
	47	C - 2	1972	6	R	Khulna
	48	C - 2	1972	6	R	Faridpur
	49	C - 2	1972	7	K	20/7/72
	50	C - 2	1972	7	D	Plan

## 10.0 SHALPEX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : G. Chronological      L. Labor Survey      S. Spot Survey  
 F. File Box Number      M. Municipal      T. Total Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross Notification

	Number	File	Year	Month	Subject Code	Subject
	51	C - 2	1972	7	VY	Kent 25/5/72 - 19/7/72
	52	C - 2	1972	7	D	Draft Plan of Operation
	53	C - 2	1972	10	R	Comilla
	54	C - 2	1972	10	RU	Khulna
	55	C - 2	1972	11	DK	Present Status & Future Plan
	56	C - 2	1972	11	B,0	Surveillance Teams
	57	C - 2	1972	11	K	Briefing for UNICEF
	58	C - 2	1972	11	D	Plan of Action
	59	C - 2	1972	11	R,U	Dacca
	60	C - 2	1972	12	RU	Dacca
	61	C - 2	1972	12	R	Comilla
	62	H	1972	12	N	Surveillance Report
	63	C - 2	1972	12	Y	Assignment Report
	64	N	1972	12	N	Surveillance Report
	65	C - 3	1973	1	K	Status 29/1/73
	66	C - 3	1973	1	K	" 31/1/73
	67	C - 3	1973	2	R	Rangpur
	68	C - 3	1973	2	R	Noakhali

## 10.0 SYMPOSIUM ELIMINATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      L. Laboratory      S. Spot Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	69	C - 3	1973	2	U	Dacca City SP
	70	C - 3	1973	2	R	Sylhet
	71	C - 3	1973	2	R	Faridpur
	72	C - 3	1973	3	K	Status 4/3/73
	73	C - 3	1973	3	R	Chittagong
	74	C - 3	1973	3	R	Bogra
	75	C - 3	1973	3	R	Saidpur Rangpur
	76	C - 3	1973	3	R	Faridpur
	77	C - 3	1973	3	R	Noakhali
	78	C - 3	1973	3	Q	Quarter Report 20/3/73
	79	C - 3	1973	3	R	Kushtia Chuadanga
	80	C - 3	1973	3	K	Status Chittagong 31/3/73
	81	C - 3	1973	3	R	Sylhet
	82	C - 3	1973	4	R	Rajshahi
	83	C - 3	1973	4	R	Chittagong
	84	C - 3	1973	4	R	Chittagong
	85	C - 3	1973	4	R	Comilla
	86	C - 3	1973	4	R	Noakhali



## 10.0 SHALPOX-ELIMINATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      L. Laboratory      S. Case Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	87	C - 3	1973	4	R	Comilla
	88	C - 3	1973	5	R	Sylhet
	89	C - 3	1973	5	K	Status Week 14
	90	C - 3	1973	5	K	Status Dacca District Week 15
	91	C - 3	1973	5	R	Rajshahi Division
	92	C - 3	1973	5	R	Mymensingh
	93	C - 3	1973	5	R	Comilla
	94	C - 3	1973	5	R	Rangpur Bogra
	95	C - 3	1973	5	M	Kushtia
	96	C - 3	1973	6	R	Faridpur
	97	C - 3	1973	7	R	Chittagong
	98	C - 3	1973	6	R	Barisal
	99	C - 3	1973	6	R	Chandpur Comilla
	100	C - 3	1973	6	I	Ara A Trial
	101	C - 3	1973	6	I	Ara C Trial
	102A	C - 3	1973	6	Q	Quarterly Report 30/3/73
	102B	N	1973	6	NZ	Newsletter
	103	C - 3	1973	7	R	Mymensingh

## 10.0 SMALLPOX ERADICATION PROGRAMS BIBLIOGRAPHY

File Code : C. Chronological      D. Laboratory      E. Door Survey  
 M. File Box Number      N. Municipal      T. Town Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	104	C - 3	1973	7	R	Jamalpur Mymensingh
	105	C - 3	1973	7	R	Faridganj Chandpur Comilla
	106	C - 3	1973	7	O	-do-
	107	C - 3	1973	7	R	Patuakhali
	108	C - 3	1973	7	R	Faridpur
	109	C - 3	1973	7	R	Khulna Jessore Kushtia
	110	C - 3	1973	7	R	Rangpur
	111	C - 3	1973	7	R	Mymensingh
	112	C - 3	1973	7	R	Noakhali
	113	C - 3	1973	7	R	Rangpur
	114	C - 3	1973	7	R	Jessore Kushtia Khulna
	115	C - 3	1973	7	R	Sylhet
	116	C - 3	1973	7	R	Comilla
	117	C - 3	1973	8	R	Tangail
	118	C - 3	1973	8	R	Bogra Rangpur Rajshahi
	119	C - 3	1973	8	R	Khulna Jessore
	120	C - 3	1973	8	R	Faridpur and Barisal
	121	C - 3	1973	9	R	Rajshahi

## 10.0 SHALPOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      D. Laboratory      S. Scar Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	122	C - 3	1973	9	K	Status 15/9/73
	123	C - 3	1973	9	R	Rangpur Bogra
	124	C - 3	1973	9	R	Kushtia Jessore
	125	C - 3	1973	9	R	Comilla
	126	C - 3	1973	9	R	Barisal
	127	C - 3	1973	10	B,O	Surveillance Team Formation
	128	C - 3	1973	10	Q	Quarterly Report 1/10/73
	129	C - 3	1973	10	R	Comilla Chandpur Rajshahi
	130	C - 3	1973	10	R	Kishorganj Netrokona Mymensingh
	131	C - 3	1973	10	R	Sylhet
	132	C - 3	1973	11	R	Chittagong Division
	133	C - 3	1973	11	E,R	Faridpur
	134	C - 3	1973	12	O	FWs - Vaccination
	135	C - 3	1973	12	R	Sylhet
	136	C - 3	1973	12	K	Status 17/12/73
	137	C - 3	1973	12	E	Noakhali outbreaks
	138	C - 3	1973	12	R	Netrokona Kishorganj Mymensingh
	139	C - 3	1973	12	E,R	Faridpur

## 10.0 SMALLPOX ERADICATION PROGRAMME BIBLIOGRAPHY

10.0

File Code : C. Chronological L. Laboratory S. Scar Survey  
 F. File Box Number M. Municipal T. Team Surveillance  
 H. House to House Search R. Reinvestigation X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	140	C - 3	1973	12	E	Faridpur outbreak Shibpur
	141	C - 3	1973	12	Q	Quarterly Report 1/1/73
	142	C - 3	1973	12	W	Newsletter December 1973
	143	C - 3	1973	1	W	Henderson HQ Appraisal
	144	C - 4	1974	1	R	Barisal Patuakhali
	145	C - 4	1974	1	KN	Newsletter
	146	C - 4	1974	2	K	Status 2/14
	147	C - 4	1974	3	R	Faridpur
	148	C - 4	1974	3	KN	Newsletter March
	149	C - 4	1974	4	D	Emergency Plan
	150	C - 4	1974	4	R	Mymensingh Jamalpur
	151	C - 4	1974	4	D	Emergency Plan
	152	C - 4	1974	4	N	Newsletter April
	153	C - 4	1974	5	R	Comilla
	154	C - 4	1974	5	R	Jessore
	155	C - 4	1974	5	R	Khulna Jessore
	156	C - 4	1974	5	Y	Roy, Rangpur Kurigram End of Tour
	157	C - 4	1974	5	W	May Newsletter

## 10.0 SHALPOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chron logical      L. Laboratory      S. Scar Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	158	C - 4	1974	6	Y	Vutuc, Mymensingh Netrokona End of Tour
	159	C - 4	1974	6	Y	Emmett Mymensingh Jamalpur End of Tour
	160	C - 4	1974	6	O	Epidemic Order
	161	C - 4	1974	6	N	June Newsletter
	162	C - 4	1974	7	Y	Anderson End of Tour Rangpur
	163	C - 4	1974	7	Y	Arnt End of Tour
	164	C - 4	1974	7	Y	Crankshaw Rangpur Kurigram End of Tour
	165	C - 4	1974	7	R	Pabna
	166	C - 4	1974	7	I	Chittagong outbreak cable
	167	C - 4	1974	7	I	" " "
	168	C - 4	1974	7	N	July Newsletter
	169	C - 4	1974	8	D	Flood Warning
	170	C - 4	1974	8	F	Budget Revision
	171	C - 4	1974	8	X	ADHS Paper
	172	C - 4	1974	8	U	Dacca City SP survey
	173	C - 4	1974	8	K	Jamalpur Monthly Summary
	174	C - 4	1974	8	W	August Newsletter
	175	C - 4	1974	9	R	Chittagong

File Code : C. Chronological L. Laboratory S. Social Survey  
 F. File Box Number M. Municipal T. Team Surveillance  
 H. House to House Search R. Reinvestigation X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	176	C - 4	1974	9	K	Status 12/9
	177	C - 4	1974	9	I	Chittagong outbreak cable
	178	C - 4	1974	9	Y	Burns Cox's Jamalpur Mymensingh
	179	C - 4	1974	9	D	Finance Report
	180	C - 4	1974	9	K	Rangpur Dinajpur Status
	181	C - 4	1974	9	I	Chittagong outbreak cable
	182	C - 4	1974	9	Y	Martin End of Tour Rangpur
	183	C - 4	1974	9	N	September Newsletter
	184	C - 4	1974	10	K	Status 7/10
	185	C - 4	1974	10	K	Status 16/10
	186	C - 4	1974	10	U	Dacca Search
	187	C - 4	1974	10	N	October Newsletter
	188	C - 4	1974	11	K	1 November Status Report
	189	C - 4	1974	11	E	Kurigram outbreak
	190	C - 4	1974	11	WF	Letter Gunaratne, COB reBudget
	191	C - 4	1974	11	R	Chittagong Division
	192	C - 4	1974	11	N	November Newsletter
	193	C - 4	1974	12	K	Status 5/12

## 10.0 SHALPOX ERADICATION PROGRAMME BIBLIOGRAPHY

10.0

File Code : C. Chronological L. Laboratory S. Spot Survey  
 F. File Box Number M. Municipal T. Team Surveillance  
 H. House to House Search R. Reinvestigation X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	194A	C - 4	1974	12	K	Status 15/12
	194BCY		1974	12	W	DA Status 19/12
	195	C - 4	1974	12	K,M	Status 26/12
	196	C - 4	1974	12	Y	DeVlemming End of Tour Rangpur Kurigram
	197	C - 4	1974	12	R,E	Bogra - Importation
	198	C - 4	1974	12	N	December Newsletter
	199	C - 5	1975	1	R	Bogra
	200	C - 5	1975	1	KU	Dacca IDH
	201	C - 5	1975	1	R	Mymensingh Jamalpur
	202	C - 5	1975	1	KU	Dacca Status 17/1/75
	203	C - 5	1975	1	K	Help
	204	C - 4	1975	1	O	Government Order
	205	C - 5	1975	1	D	Letter Secretary of Health
	206	C - 5	1975	1	U	Dacca City 25/1/75
	207	C - 5	1975	1	N	January News-letter
	208	C - 5	1975	2	K	Status 1/2/75
	209	C - 5	1975	2	D	Draft outline Operations
	210	C - 5	1975	2	D	Letter WR to President

## 10.0 SMALLPOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological L. Laboratory S. Scar Survey  
 F. File Box Number M. Municipal T. Team Surveillance  
 H. House to House Search R. Reinvestigation X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	211	C - 5	1975	2	I	Chittagong IDH Report
	212	C - 5	1975	2	I	Chittagong IDH Report
	213	C - 5	1975	2	DP	Emergency Smallpox Programme Press
	214	C - 5	1975	2	DP	Ministry Health Press Release
	215	C - 5	1975	2	DP	GOB Press Release
	216	C - 5	1975	2	M	Joint Ministry Meeting
	217	C - 5	1975	2	DO	National Mobilization Order
	218	C - 5	1975	2	D,F,K	Financial Backgrounds
	219	C - 5	1975	2	F	Budget Estimate
	220	C - 5	1975	2	M	Dacca Meeting
	221	C - 5	1975	2	F	Planning Commission
	222	C - 5	1975	2	F	Budget to Ministry
	223	C - 5	1975	2	O	Dacca Emergency Order
	224	C - 5	1975	2	R	Mymensingh
	225	C - 5	1975	2	M	Joint Ministry Meeting
	226	C - 5	1975	2	K	Status 24 February
	227	C - 5	1975	2	I	Chittagong IDH Report
	228	C - 5	1975	2	O	Includes FP in Emergency



## 10.0 STALLION ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      L. Laboratory      S. Sear Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	229	C - 5	1975	3	N	Newsletter March
	230	C - 5	1975	3	R	Faridpur
	231	C - 5	1975	3	N	News-Letter 12 March
	232	C - 5	1975	3	D,O	Revised Emergency Plan
	233	C - 5	1975	3	N	Newsletter 19 March
	234	C - 5	1975	3	O,S	New Foremat Cable Reporting
	235	C - 5	1975	3	N	Newsletter 27 March
	236	C - 5	1975	3	K,R	Faridpur Barisal Patuakhali
	237	C - 5	1975	4	N	Newsletter 3 April
	238	C - 5	1975	4	W	World Health Day
	239	C - 5	1975	4	N	Newsletter 8 April
	240	C - 5	1975	4	N	Newsletter 16 April
	241	C - 5	1975	4	N	Newsletter 23 April
	242	C - 5	1975	4	R	Chittagong
	243	C - 5	1975	4	R	Newsletter 30 April
	244A	C - 5	1975	5	HO	May Search Order
	244B	C - 5	1975	5	K	Status 7 May
	245	C - 5	1975	5	N	Newsletter 7 May

## 10.0 BANGLADESH ERADICATION PROGRAMS BIBLIOGRAPHY

File Code : C. Chronological L. Laboratory S. Search Party  
 F. File Box Number M. Municipal T. Team Assistance  
 H. House to House Search R. Reinvestigation X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	246	C - 5	1975	5	N	Newsletter 14 May
	247	C - 5	1975	5	N	Newsletter 21 May
	248	C - 5	1975	5	K	Status 21 May
	249	C - 5	1975	5	X	Exportations
	250	C - 5	1975	5	J	Staffing
	251	C - 5	1975	5	N	Newsletter 28 May
	252	C - 5	1975	5	G	Guidelines for Resident Supervisor EFW
	253	C - 5	1975	5	P	Press Package 29 May
	254	C - 5	1975	5	AH	Chittagong Assessment Report
	255	C - 5	1975	6	N	Newsletter 4 June
	256	C - 5	1975	6	R	Tangail
	257	C - 5	1975	6	N	Newsletter 11 June
	258	C - 5	1975	6	K	Newsletter 11 June continued
	259	C - 5	1975	6	N	Newsletter 18 June
	260	C - 5	1975	6	HK	Status 20 June + May Search Report
	261	C - 5	1975	6	N	Newsletter 25 June
	262	C - 5	1975	6	R	Barisal
	263	C - 5	1975	6	U	Dacca City

## 10.0 SHALPOK EDUCATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      L. Laboratory      S. Scar Survey  
 F. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	264	C - 5	1975	6	K	Dacca
	265	C - 5	1975	7	HO	July Search Order
	266	C - 5	1975	7	N	Newsletter 2 July
	267	C - 5	1975	7	R	Khulna
	268	C - 5	1975	7	M	PD Meeting
	269	C - 5	1975	7	R	Kushtia
	270	C - 5	1975	7	N	Newsletter 08 July
	271	C - 5	1975	7	N	Newsletter 17 July
	272	C - 5	1975	7	M	Area Coordinators Meeting
	273	C - 5	1975	7	N	Newsletter 23 July
	274	C - 5	1975	7	N	Newsletter 31 July
	275	C - 5	1975	7	HO	August Search Order
	276	C - 5	1975	7	MO	August Meeting Order
	277	C - 5	1975	8	K	Status 1/8/76
	278	C - 5	1975	8	N	Newsletter 04 August
	279	C - 5	1975	8	RU	Khulna
	280	C - 5	1975	8	N	Newsletter 14 August
	281	C - 5	1975	8	M	Area Coordinators Meeting

## 10.0 SMALLPOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      D. Laboratory      S. Scar Survey  
 F. File Box Number      M. Mailed      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	282	C - 5	1975	8	N	Newsletter 21 August
	283	C - 5	1975	8	N	Newsletter 26 August
	284	C - 5	1975	8	DG	Crush Smallpox Guidelines
	285	C - 5	1975	8	K	Dacca
	286	C - 5	1975	8	Z	Chittagong Hill Tracts Special Search
	287	C - 5	1975	9	HO	September Search Order
	288	C - 5	1975	9	RU	Dacca
	289	C - 5	1975	9	D	Draft Program September - December
	290	C - 5	1975	9	N	Newsletter 03 September
	291	C - 5	1975	9	N	Newsletter 10 September
	292	C - 5	1975	9	I	Chittagong IDH
	293	C - 5	1975	9	N	Newsletter 17 September
	294	C - 5	1975	9	BT	Surveillance Team Leaders Training
	295	C - 5	1975	9	N	Newsletter 23 September
	296	C - 5	1975	9	P	Press Release UOA
	297	C - 5	1975	9	R	National Epidemiologist
	298	C - 5	1975	9	D	ADHS - SEP Integration
	299	C - 5	1975	9	L	Flourescent Antibody

## 10.0 SHALFOX ERADICATION PROGRAMME BIBLIOGRAPHY

File Code : C. Chronological      D. Laboratory      S. Spot Survey  
 E. File Box Number      M. Municipal      T. Team Surveillance  
 H. House to House Search      R. Reinvestigation      X. Cross-Notification

	Number	File	Year	Month	Subject Code	Subject
	300	C - 5	1975	10	N	Newsletter 01 October
	301	C - 5	1975	10	HO	October Search Order
	302	C - 5	1975	10	R	Rajmashi
	303	C - 5	1975	10	N	Newsletter 09 October
	304	C - 5	1975	10	N	Newsletter 16 October
	305	C - 5	1975	10	N	Newsletter 23 October
	306	C - 5	1975	10	N	Newsletter 30 October
	307	C - 5	1975	10	K	Status 31 October
	308	C - 5	1975	10	R	Netrokona
	309	C - 5	1975	10	N	Newsletter 6 November
	310	C - 5	1975	11	OU	Municipal O
	311	C - 5	1975	11	O	Discipline O
	312	C - 5	1975	11	HO	November December Search Order
	313	C - 5	1975	11	N	Newsletter 20 November
	314	C - 5	1975	11	P	World Health Press Release Kuralia
	315	C - 5	1975	11	N	Newsletter 28 November
	316	C - 5	1975	12	HK	November December Search Report
	317	C - 5	1975	12	N	Newsletter 11 December

[illegible]